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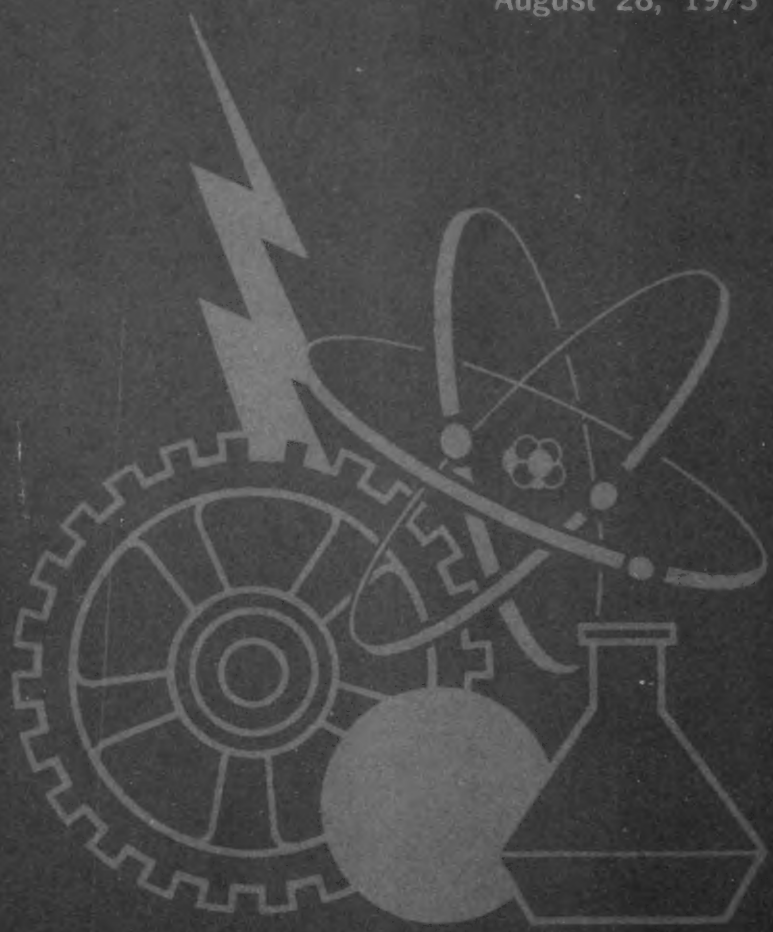
PATENTS

August 28, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 28, 1973 Volume 913 Number 4

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PATENT OFFICE NOTICES

Printing Practitioners' Names on Patents

On September 8, 1972 (903 O.G. 369), the Patent Office requested comments on a proposal regarding the printing of a firm name or the names of individual practitioners on the patent, as indicated by the applicant at the time the issue fee is paid. The comments received indicated strong support for the proposed procedure.

In view of these comments, the Patent Office has adopted the following revised procedure for printing a firm name, the names of up to three registered patent practitioners, or no practitioner's name on the patent.

The Notice of Allowance form, POL–85, has been redesigned in part to provide a space on POL–85b, the Base Issue Fee Transmittal form, for the person submitting the base issue fee to indicate, for printing, the names of up to three registered patent attorneys and agents or, alternatively, the name of a single firm which has as a member at least one registered patent attorney or agent. If the person submitting the base issue fee desires that no practitioner's name be printed on the patent, the space provided on the revised Base Issue Fee Transmittal form should be left blank. If no name is given, no name will be printed.

The adoption of this new procedure is intended to solve various problems encountered since the practice of recognizing firms was discontinued. While some slight additional effort on the part of the attorney or agent is thus involved if he desires to have a printed entry on the patent, the following advantages are provided by the new procedure: (1) it permits printing firm names on patents even though firms are no longer registered with or recognized by the Patent Office in new application; (2) it allows the names of those individuals who actually performed the work of preparing and prosecuting the application to appear on the printed patent; and (3) it grants an attorney or agent the option of not having his name appear on the printed patent.

The revised form POL–85 will be placed in use as soon as a supply of the form is received from the printer. Thereafter, the new practice, as indicated above, will be followed in patent printing as the Base Issue Fee Transmittal Portion of that form (POL–85b) is received.

RENE D. TEGTMEYER,
Aug. 3, 1973. *Acting Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,727,069, J.P.M. Van Waes, PREPARATION OF UREA, **filed** Mar. 21, 1973, D.C., S.D. Ohio (Cincinnati), Doc. 8762, *Borden, Inc.* v. *Idi Management, Inc.*

2,729,551, C. C. Cohn, SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS, **filed** Apr. 12, 1973, D.C., E.D. Mich. (Detroit), Doc. 39969, *Samuel L. Cohn, Charles C. Cohn and Colonial Alloys* v. *George W. Taylor, Bob M. Taylor, and Production Plating Co.*

2,749,267, Gill and Southwick, THE METHOD OF COVERING THE JOINT BETWEEN WALLBOARD AND THE RESULTANT PRODUCT, **filed** July 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1682, *United States Gypsum Co.* v. *Palmer Wallboard Tapes, Inc. et al.* Order on stipulation of parties, cause dismissed on all claims with prejudice, Apr. 5, 1973.

2,877,573, G. W. Kenyon, TRIPPING DEVICES FOR SNOW PLOWS, **filed** Apr. 2, 1973, D.C., S.D.N.Y., Doc. 73–1361, *Frink Snow-Plows, Inc.* v. *Samson Hydraulics.*

2,900,150, Hirt, and Martino, EJECTION SEAT CATAPULT; **3,115,320,** G. E. Hirt, same, **filed** Mar. 30, 1973, Ct. of Cl. (District of Columbia), Doc. 78–73, *Talley Industries,* v. *United States of America.*

2,953,279, R. S. Coffman, SAFETY PRESSURE RELIEF DEVICE, **filed** June 2, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1326–F, *Black, Sivalls and Bryson, Inc.* v. *Ametek, Inc.* Consent judgment: Patents 2,953,279 and 3,485,082 valid. Defendant induces infringement of one or more claims of Patent 3,485,082, defendant having admitted such inducement. Plaintiff's cause of action for unfair competition is dismissed with prejudice, complaint dismissed, Mar. 20, 1973.

2,953,296, R. F. Shoup, VOTING MACHINE; **3,170,623** same, VOTING MACHINE WITH REMOVABLE VOTING SPINDLE HANDLES; **3,312,390,** same, VOTING MACHINE; **3,436,011,** same, MEANS FOR ADJUSTING THE INTERLOCK OF A VOTING MACHINE, **filed** Mar. 30, 1973, D.C., E.D. Pa., (Philadelphia), Doc. 73–756, *International Election Systems Corporation* v. *Ransom F. Shoup et al.*

2,984,841, N. E. Wilson, TOILET BOWL DEODORIZERS AND HOLDERS THEREFOR, **filed** Sept. 21, 1972, D.C., S.D. Ind. (Evansville), Doc. 72–C–72, *The Puro Co., Inc.* v. *E. Bierhaus & Sons, Inc. et al.* Motion to dismiss sustained Mar. 7, 1973, case dismissed with prejudice, Apr. 3, 1973.

3,115,320. (See 2,900,150.)

3,014,994, S. Posen, EYEGLASS HEARING AID CONSTRUCTION; **3,209,080,** Guttner, Starke and Sapara, ELECTRICAL HEARING AID, **filed** Feb. 2, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c296, *Siemens Aktiengesellschaft* v. *Sonotone Corporation.*

3,128,737, E. M. Usab, FLOATING WHARF STRUCTURE **Re. 24,837,** same, FLOATING WHARF STRUCTURE MADE OF CONCRETE FLOAT UNITS, **filed** May 5, 1972, D.C., W.D. Wash. (Seattle), Doc. 291–72C2, *Waterpavers International, Inc.* v. *Martronics Corporation.* Defendants enjoined by consent from further infringement for the life of the patents, Apr. 11, 1973.

3,169,615, L. Stein, CARRYING CASE WITH FREELY HINGED CLOSURE, **filed** June 16, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1456, *Stebco Products Corporation* v. *Faircraft Engineering, Inc. and Sears, Roebuck & Co.* Stipulated order for dismissal, Faircraft agrees to refrain from any further manufacture and/or sale, Stebco waives any claim for past infringement, Apr. 10, 1973.

3,170,623. (See 2,953,296.)

3,209,080. (See 3,014,994.)

3,274,906, Worson and Dill, JOINT INSTALLATION, **filed** Apr. 19, 1973, D.C., N.D. Calif. (San Francisco), Doc. C–73–0639 SC, *Edoco Technical Products, Inc.* v. *Frederickson & Watson Construction Co.*

3,303,615, L. O'Neal, INFLATABLE DOCK SEAL, **filed** Apr. 12, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c954, *Larry O'Neal and O'Neal Tarpaulin & Awning Company* v. *Atlas Industries, Inc.*

3,311,928, Werth and King, PROCESS OF BASTING AND REMOVAL OF BASTING, **filed** Apr. 18, 1973, D.C., N.D. Ind. (Fort Wayne), Doc. 73–F–36, *Solvex Corporation* v. *Joseph H. Cohen & Sons, Inc.*

3,312,390. (See 2,953,296.)

3,436,011. (See 2,953,296.)

3,502,785, A. D. Nickola, MOUNTING PEDESTAL FOR UTILITIES, **filed** Apr. 18, 1973, D.C., E.D. Mich. (Flint), Doc. 634, *Anne D. Nickola* v. *Kenneth Peterson, doing business as Kay-Dee Products.*

3,532,296, A. E. Murvall, LINE SPOOL BRAKING DEVICE FOR FISHING REELS, **filed** Apr. 11, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–805–DWW, *Abu Aktiebolag* v. *Daiwa Corporation and Daiwa Seiko, Inc.*

3,541,631, Kluge and Paulson, INDUSTRIAL VACUUM LOADER AND CLEANER, **filed** Apr. 12, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73–C–200, *Super Products Corporation* v. *D. P. Way Corporation, et al.*

3,613,044, W. G. Rarick, POWER SUPPLY CORD HATCH. **filed** Jan. 28, 1972, D.C., N.D. Ind. (Fort Wayne), Doc. 72–F–4, *Lyall Electric, Inc.* v. *Geisel Distributors, Inc. et al.* Defendants enjoined permanently, consent judgement, Apr. 11, 1973.

3,615,117, P. E. Neidlinger, ANTISAIL TARPAULIN, **filed** Apr. 9, 1973, D.C., W.D.N.C. (Charlotte), Doc. C–C–73–78, *East Akron Tarp & Ratchet Mfg. Co., Inc.* v. *Austin Cushion and Canvas.*

3,650,460, B. P. Lokey, PAPER BAG; **3,687,356,** Goodrich and Waxlax, GUSSETED TYPE BAGS, **filed** Apr. 9, 1973, D.C., S.D. Ill. (Peoria), Doc. P–C–73–31, *St. Regis Paper Company* v. *Bemis Company, Inc.*

3,687,356. (See 3,650,460.)

3,687,467, W. B. Kosmowski, COLLET, **filed** Apr. 6, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–762–R, *Digital Systems, Inc.* v. *Advanced Controls Corporation et al.*

3,693,667, W. C. Arnold, HEALD FRAME, **filed** Apr. 19, 1973, D.C. (District of Columbia), Doc. 756–73, *H. J. Theiler Corporation* v. *Bonas Machine Company, Limited.*

3,695,138, C. W. Andersen, PORTABLE MUSIC LABORATORY, **filed** Apr. 11, 1973, D.C. Minn. (Minneapolis), Doc. 4–73–C–207, *Musitronic Inc.* v. *Wurlitzer Company.*

3,722,399, J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS, **filed** Apr. 16, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c979, *Scovill Manufacturing Co.* v. *National Presto Industries Inc. et al.*

3,722,817, A. B. Fletcher, SPRAYER, **filed** Apr. 13, 1973, D.C., W.D. Okla. (Oklahoma City), Doc. 73–253–C, *F & F Manufacturing, Inc.* v. *Dixon Distributors, Inc.*

3,725,158, Messerschmidt, Jr., Heyman and Johnsen II, MULTI-COMPONENT POWDERLESS ETCHING BATH ADDITIVE; **3,725,159,** Messerschmidt, Heyman and Johnsen II, POWDERLESS ETCHING BATH COMPOSITIONS, **filed** Apr. 16, 1973, D.C. Del. (Wilmington), Doc. 4628, *Mona Industries, Inc.* v. *Philip A. Hunt Chemical Corporation.*

3,725,159. (See 3,725,158.)

Re. 24,837. (See 3,128,737.)

Certificates of Correction for the Week of Aug. 28, 1973

Re. 27,580	3,688,766	3,710,747	3,720,560
D.225,785	3,688,992	3,710,797	3,720,576
3,318,815	3,690,798	3,711,941	3,720,608
3,442,190	3,690,934	3,712,270	3,720,642
3,454,385	3,691,410	3,712,686	3,720,756
3,525,846	3,691,578	3,712,825	3,720,873
3,528,358	3,691,742	3,712,937	3,720,935
3,571,954	3,692,113	3,713,141	3,720,990
3,584,097	3,692,649	3,713,334	3,721,052
3,586,679	3,692,860	3,713,715	3,721,141
3,588,428	3,692,948	3,713,728	3,721,164
3,596,789	3,693,131	3,713,815	3,721,269
3,599,563	3,693,428	3,713,847	3,721,282
3,600,433	3,693,521	3,713,983	3,721,366
3,602,719	3,694,913	3,714,045	3,721,518
3,619,164	3,696,961	3,714,077	3,721,616
3,619,991	3,697,197	3,714,106	3,721,674
3,622,008	3,697,620	3,714,396	3,721,690
3,626,950	3,699,416	3,714,647	3,721,710
3,632,479	3,699,520	3,715,019	3,721,879
3,638,423	3,700,031	3,715,422	3,722,131
3,641,895	3,700,595	3,715,957	3,722,152
3,644,078	3,700,784	3,716,048	3,722,194
3,648,130	3,702,153	3,716,221	3,722,273
3,648,998	3,702,392	3,716,293	3,722,379
3,652,562	3,703,979	3,716,909	3,722,646
3,657,127	3,704,201	3,717,093	3,722,987
3,658,937	3,704,324	3,717,284	3,722,990
3,663,881	3,704,818	3,717,363	3,723,059
3,669,964	3,705,354	3,717,585	3,723,363
3,670,043	3,705,670	3,717,631	3,723,407
3,670,162	3,705,671	3,718,064	3,723,429
3,671,259	3,705,801	3,718,077	3,723,845
3,671,851	3,705,877	3,718,102	3,724,027
3,673,143	3,706,441	3,718,160	3,724,030
3,673,165	3,706,686	3,718,322	3,724,350
3,675,485	3,707,484	3,718,459	3,724,452
3,676,344	3,708,415	3,718,547	3,724,480
3,678,824	3,708,582	3,718,905	3,725,060
3,679,607	3,709,430	3,718,911	3,725,117
3,683,425	3,709,724	3,719,487	3,725,176
3,684,025	3,709,761	3,719,559	3,725,189
3,684,100	3,710,374	3,719,628	3,725,734
3,684,722	3,710,491	3,719,661	3,725,939
3,684,728	3,710,494	3,720,330	3,725,959
3,686,549	3,710,546	3,720,407	
3,688,332	3,710,678	3,720,528	

Disclaimers

3,614,484.—*Andrew Shoh,* Ridgefield, Conn. ULTRASONIC MOTION ADAPTER FOR A MACHINE TOOL. Patent dated Oct. 19, 1971. Disclaimer filed May 21, 1973, by the assignee, *Branson Instruments Incorporated.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 9, 1988.

3,633,927.—*Dale A. Van Deven,* Ann Arbor, Mich. MOLDED-LIP HYDRODYNAMIC SHAFT SEAL. Patent dated Jan. 11, 1972. Disclaimer filed June 28, 1973, by the assignee, *Federal-Mogul Corporation.*

Hereby enters this disclaimer to claims 1 through 8 of said patent.

3,704,241.—*Shunsaku Noguchi* and *Shoji Kishimoto,* Osaka, Japan. 4-PYRAZOLE ACETIC ACID COMPOUNDS. Patent dated Nov. 28, 1972. Disclaimer filed July 25, 1973, by the assignee, *Takeda Chemical Industries, Ltd.*

Hereby enters this disclaimer to claims 1 to 8 of said patent.

3,729,610.—*Iwao Kondo,* Tokyo, Japan. ELECTRICAL DISCHARGE MACHINING DEVICE USING LOGICAL CONTROL. Patent dated Apr. 24, 1973. Disclaimer filed Oct. 30, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 4, 1989.

3,733,778.—*Ernest C. Hungate, Harold A. Ogletree,* and *Grason T. Nickel,* Greensboro, N.C. POLLUTION CONTROL METHOD AND APPARATUS. Patent dated May 22, 1973. Disclaimer filed Apr. 2, 1973, by the assignee, *Air Conditioning Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Apr. 10, 1990.

Disclaimers and Dedications

2,748,872.—*Mordica O. Johnston,* Glendale, Calif. WELL TOOL ANCHORING DEVICE. Patent dated June 5, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston.*

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

2,751,011.—*Mordica O. Johnston,* Glendale, Calif. SIDE WALL TESTING APPARATUS. Patent dated June 19, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston.*

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

2,751,020.—*Mordica O. Johnston,* Glendale, Calif. VALVE FOR USE WITH SIDE WALL TESTING APPARATUS. Patent dated June 19, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston.*

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

2,760,580.—*Mordica O. Johnston,* Glendale, Calif. SIDE WALL TESTER. Patent dated Aug. 28, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston.*

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

Dedications

2,859,561.—*Joseph E. Jendrisak,* Northville, Mich. APPARATUS FOR BENDING GLASS SHEETS OR PLATES. Patent dated Nov. 11, 1958. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,094,463.—*John H. Biel,* Milwaukee, Wis. COMPOSITION CONSISTING OF 2-PYRROLIDYL-METHYL-N-LOWER ALKYL AND 3-PIPERIDYL-N-LOWER ALKYL PHENYLGLYCOLATES AS ANTI-SPASMODICS AND CENTRAL STIMULANT, AND PROCESS OF PREPARATION. Patent dated June 18, 1963. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 4, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-30-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-01-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-03-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-01-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-23-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-27-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-23-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-17-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	11-17-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-01-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	7-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-18-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-25-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-01-72

Expiration of patents: The patents within the range of numbers indicated below expire during August 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,757,378 to 2,761,141, inclusive
Plant Patents ..... Numbers 1,505 to 1,508, inclusive

REISSUES

AUGUST 28, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,741
MANUAL DIAPHRAGM SETTING DEVICE FOR A CAMERA HAVING AUTOMATIC EXPOSURE ADJUSTING DEVICE

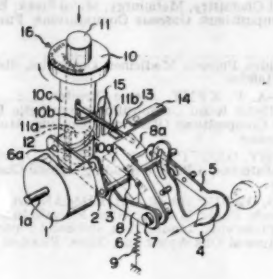
Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku, K.K., Tokyo Japan

Original No. 3,601,023, dated Aug. 24, 1971, Ser. No. 832,623, June 12, 1969. Application for reissue Aug. 18, 1972, Ser. No. 281,860

Claims priority, application Japan, June 26, 1968, 43/54,196

Int. Cl. C03b *7/12, 9/02*

U.S. Cl. 95—10 C 9 Claims



A manual control for the diaphragm of a camera is provided to override the automatic setting of the diaphragm by an exposure meter built into the camera. By a scissoring, or pinching action of two levers pivoted on a common shaft, a rocker actuating shaft controlling the automatic setting of the aperture blades is moved into and held in a desired aperture setting position upon depression of a pushbutton and rotation of an aperture setting sleeve. An operating rod movable upon depression of the pushbutton permits biased movement of one lever and also opens the exposure meter circuit. A cam groove in the aperture setting sleeve positions the other lever to the desired aperture setting positions.

27,742
CENTRIFUGAL CLASSIFIER

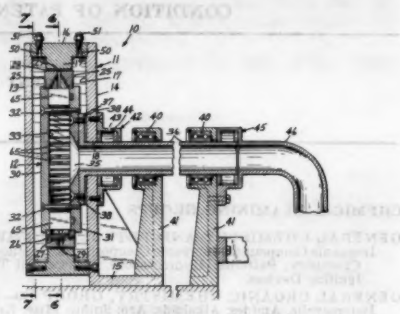
Charles E. Lapple, Los Altos, Calif., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Original No. 3,491,879, dated Jan. 27, 1970, Ser. No. 631,628, Apr. 18, 1967. Application for reissue Jan. 17, 1972, Ser. No. 218,566

Int. Cl. B07b *7/083*

U.S. Cl. 209—144 8 Claims

Apparatus for classifying particles of a powder according to size having a rotor and a stator separated by a narrow annular air gap. The rotor has a hollow coaxial chamber therein in communication with the air gap along the periphery of the rotor, and a central coaxial opening for the egress of an elutriating fluid and the fine fraction of the powder. The elutriating fluid under pressure is supplied to the chamber through the gap and a vortex is produced generally within the rotor in the flow of fluid by the rotation of the rotor. The powder to be classified is supplied to the vortex and the coarse fraction of the powder, which is forced toward the stator, is removed through a coarse fraction passageway while the



fine fraction is removed with the fluid through the axial opening in the rotor.

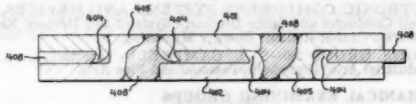
27,743
ELECTRICAL CONNECTION FOR TERMINATING ALUMINUM FOIL

Edgar Arthur Weimer, Jr., Harrisburg, Pa., assignor to AMP Domestic Inc.

Original No. 3,247,316, dated Apr. 19, 1966, Ser. No. 361,853, Apr. 22, 1964, which is a continuation-in-part of abandoned application 857,158, Dec. 3, 1959, and application Ser. No. 141,166, Sept. 27, 1961, now Patent No. 3,138,658. Application for reissue Nov. 28, 1969, Ser. No. 876,185, which is a continuation of abandoned applications Ser. No. 646,741, Apr. 27, 1967, and Ser. No. 726,621, Apr. 29, 1968

Int. Cl. H01r *5/00*

U.S. Cl. 174—94 R 6 Claims



An improved electrical connector provided by a pair coextensive plates having opposed apertures therein and lances on the plates projecting toward the apertures, so that when the plates are pressed together by opposing anvils some of the lances pass through the sheet and opposing apertures to be compressed by an anvil while other lances become embedded therein.

27,744
STRAPPING MACHINE

Ronald J. Billett, Sunnyvale, and Terence H. West, San Jose, Calif., assignors to FMC Corporation, Philadelphia, Pa.

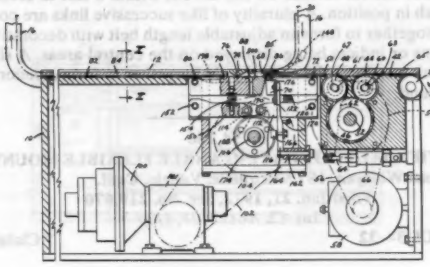
Original No. 3,269,300, dated Aug. 30, 1966, Ser. No. 421,883, Dec. 29, 1964. Application for reissue Aug. 29, 1972, Ser. No. 284,564

Int. Cl. B65b *13/32*

U.S. Cl. 100—8 15 Claims

1. Apparatus for securing a tensioned plastic strap about an article, said apparatus comprising means for supporting an article in strapping position, gripping means for

holding the leading end of a strap looped about the article in relaxed spaced overlapping relationship with respect to a strap portion extending to a supply, tensioning means for tensioning the strap about the article, holding means for holding the strap under tension about the article, *means for disengaging said tensioning means whereby the*

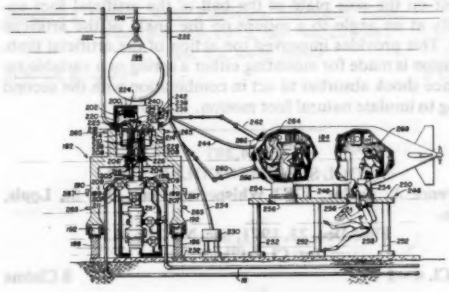


strap portion extending to the supply from said holding means is relaxed, means for melting the facing surface areas of the overlapping strap portions, squeezing means for squeezing the melted surface areas together whereby a fused joint is formed, and cutting means for cutting the strap from the supply adjacent the fused joint.

27,745
SUBSEA PRODUCTION SYSTEM

Warren B. Brooks, Darien, Conn., Charles Ovid Baker, Garland, and Eugene L. Jones, Dallas, Tex., assignors to Mobil Oil Corporation

Original No. 3,520,358, dated July 14, 1970, Ser. No. 649,959, June 29, 1967. Application for reissue Apr. 9, 1971, Ser. No. 132,864
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 **50 Claims**

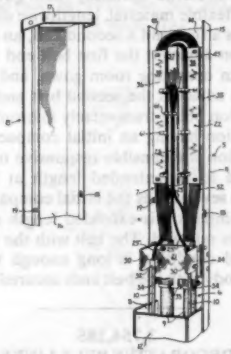


This specification discloses a subsea system for the production of fluid minerals. The system includes a product gathering network provided with production satellites in which the gas-oil-water ratios of each well are periodically tested and the flow rates are automatically controlled. A power distribution network connects a central power station, either floating or bottom supported, at the site or on land nearby, with the various satellite stations and submerged wellhead units. Provision is made for entry into the satellites and diver maintenance at the submerged wellheads. Also, as a part of this subsea system, is a remotely controlled wireline unit. Submerisible vehicles function as underwater rest stations for divers working on the subsea equipment as well as conveyances for transporting divers and nondiving personnel to the satellites and wellhead units. General purpose submersible vehicles with articulated manipulators, as well as specialized robot submersibles such as pipe welders and wireline units, permit diverless installation of equipment as well as maintenance and control of the installed equipment.

27,746
TERMINAL ENCLOSURE FOR BURIED CABLE PLANT

Douglas L. P. Hamilton, Jensen Beach, Fla., assignor to Utility Products Co., Milwaukee, Wis.

Original No. 3,604,835, dated Sept. 14, 1971, Ser. No. 30,669, Apr. 22, 1970. Application for reissue Nov. 15, 1972, Ser. No. 306,658
Int. Cl. H02g *9/02*
U.S. Cl. 174—38 **13 Claims**



A terminal chamber in the top part of a terminal enclosure for a buried cable installation is compartmented by platelike supporting and partition members, both carried by a channel-shaped rear member comprising the main enclosure body. Both compartmenting members are in forwardly spaced generally parallel relation to the rear member web. The supporting member, near the bottom of the terminal chamber supports upright stretches of cable and service lines. The partition member, spaced above it, has spliced conductors and an unassigned conductor loop secured to and overlying its front face, while a loop of unassigned conductors lies behind it.

PATENTS

GRANTED AUGUST 28, 1973

GENERAL AND MECHANICAL

3,754,284
BELT FOR DISPOSABLE GARMENT

Edward G. Hartigan, Schaumberg, and Richard L. Zoephel, Lake Villa, both of Ill., assignors to The Kendall Company, Walpole, Mass.

Filed Feb. 15, 1972, Ser. No. 226,497
Int. Cl. A41d *13/00*
U.S. Cl. 2—114 **16 Claims**

A belt for use in sterile operating room gowning procedure is composed of flexible material, lengthwise dimensionally stable. The belt has a first and a second end, an intermediate attachment portion adjacent the first belt end and adapted for attachment to an operating room gown, and a second intermediate portion adjacent the second belt end, the second intermediate portion being transversely micropleated to form a compacted portion having an initial compacted length. The compacted portion is extensible responsive to tension on the second belt end to an extended length at least twice and preferably six to seven times the initial compacted length, and substantially maintains this extended length after tension on the second end is released. The belt with the compacted portion in extended condition is long enough to surround the gown wearer's body with the belt ends secured together.

3,754,285
DECORATIVE BELT LINKS

George Greene, 59 Central Ave., Caldwell, N.J.

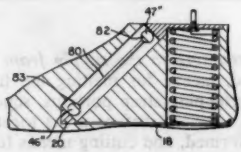
Filed Apr. 24, 1972, Ser. No. 246,877
Int. Cl. A41f *1/00, 19/00*
U.S. Cl. 2—336 **10 Claims**

A unitary belt link of thin flexible material includes a central display area and integral longitudinal link portions extending from opposite sides of the central area. Cooperating coupling members are disposed at the opposite ends of the link. Open areas around the opposite sides of the central area extend laterally toward the edges of the link and provide narrow strips along the edges which connect the central area to the ends. The end coupling members preferably include lateral slots at one end and a larger laterally extending T-shaped integral tab at the other end engageable with the slots. A raised lateral surface on the tab fits within a slot to secure the tab in position. A plurality of like successive links are coupled together to form an adjustable length belt with decorative designs or indicia being displayed on the central areas. A single link may have the ends coupled together to form a decorative band.

3,754,286
ARTIFICIAL FOOT HAVING ANKLE FLEXIBLE MOUNT

Michael W. Ryan, 187 Marquette, Vallejo, Calif.

Filed Jan. 21, 1972, Ser. No. 219,670
Int. Cl. A61f *1/04, 1/08*
U.S. Cl. 3—32 **7 Claims**

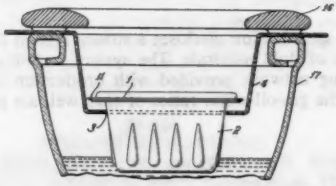


An artificial foot including an improved ankle and foot mount is attached to a conventional stump mounted artificial leg. A coil spring extends downwardly from rigid attachment to the artificial limb in the vicinity of the ankle at the upper end and attaches rigidly to a plate in the plane of the sole of the foot at the lower end. The sole plate, extending from the heel to the ball of the foot, cantilevers from the coil spring to emulate natural foot action during walking. A second sole plate support, capable of accommodating both tension and compression as well as side to side foot motion, extends from a mount on the sole plate at the ball of the artificial foot upwardly at an angle to a mount on the ankle of the artificial limb. This provides improved toe action of the artificial limb. Provision is made for mounting either a spring or a variable resistance shock absorber to act in combination with the second spring to imulate natural foot motion.

3,754,287
STOOL SPECIMEN COLLECTOR

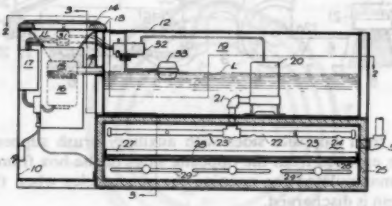
Lawrence A. Taylor, 1282 Whispering Pines Dr., St. Louis, Mo.

Filed Dec. 23, 1971, Ser. No. 211,313
Int. Cl. A47k *17/00*
U.S. Cl. 4—1 **8 Claims**



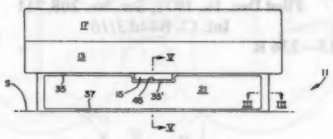
A stool specimen container serves also as the original receiver from the donor. The receiver-container is nested within a tub which, when receiving, floats on the water in a water closet supported in position by a frame which rests on the closet bowl. After deposit of the specimen, the covered container is lifted from the tub. All parts of the assemblage may be disposable.

3,754,288
WASTE DISPOSAL SYSTEM
Ernest Weiss, 3140 S. Ocean Dr., Hallendale, Fla.
Filed July 29, 1971, Ser. No. 167,351
Int. Cl. A47k *11/02*
U.S. Cl. 4—131 5 Claims



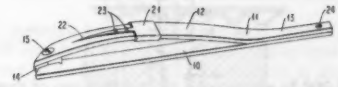
A waste disposal system comprises a receiving chamber including a mechanical grinding device, a liquifying tank in communication therewith and a source of liquifying chemicals connected thereto, an incinerating chamber communicates with the liquifying chamber by way of a pump and includes heating means. Waste products and chemicals added thereto result in substantial liquification of the waste products in the liquifying tank and the subsequent delivery of portions of the liquified waste and liquid carrier to the incinerator chamber act in the maner of a flash boiler to quickly incinerate the waste products and evaporate the liquid carrier.

3,754,289
BED BASE
Edward J. Larkin, 4899 Fleetview, Memphis, Tenn.
Filed Feb. 28, 1972, Ser. No. 229,962
Int. Cl. A47c *19/00*
U.S. Cl. 5—201 5 Claims



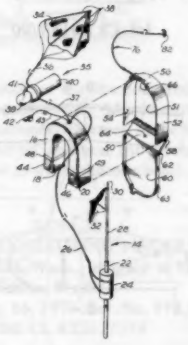
A bed base for supporting a box spring which includes a downwardly projecting support member extending substantially along the longitudinal centerline thereof and normally having a mattress resting thereon. The bed base includes a pair of side panels and a pair of end panels. The side panels are shorter than the box spring is long, and the end panels are shorter than the box spring is wide. The side and end panels are equal in width and span a distance or enclose the space between the box spring and the floor. The opposite ends of the side panels include vertical tongue structure and the opposite ends of the end panels are provided with vertical grooves for receiving the tongues of the side panels to rigidly and removably lock the side panels to the end panels, thus establishing a continuous ledge for restingly supportint the box spring with the perimeter thereof projecting outwardly from the bed base. The box spring is precluded from side to side shifting by providing a groove in each of the end panels for receiving the downwardly projecting support member.

3,754,290
FLY FISHERMAN'S LEADER CUTTER
Joseph Harrington Nicholson, deceased, late of Union Valley Rd., Mahopac, N.Y. (Alice Barker Nicholson, executrix)
Filed Nov. 17, 1970, Ser. No. 90,354
Int. Cl. B25f *1/00*; B26b *17/04*
U.S. Cl. 7—1 H 4 Claims



A cutter for a fly fisherman's leader line. The cutter is a bifurcated spring loaded tool having a cutting instrument with an observable convex edge affixed to one of the bifurcations. Provision is also made for the cutter to carry a hook cleaner and hook storer. The cutter is particularly adapted for use in cutting highly resistant materials such as nylon, dacron and other synthetics.

3,754,291
QUICK RELEASE LIFE SAVING EQUIPMENT
John L. Harris, and Robert W. Hellman, both of Marina Del Rey, Calif., assignors to Del Amo Enterprises, Inc., Torrance, Calif.
Filed Nov. 26, 1971, Ser. No. 202,255
Int. Cl. B63c *9/22*
U.S. Cl. 9—14 16 Claims

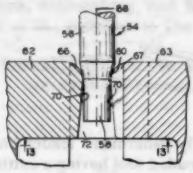


Life saving equipment in which a life buoy is disposed in a container having a fall-away construction defined by pivotal connections between a front wall and bottom wall and between a rear wall and the bottom wall. A remote cable release interconnects a latching component on the front wall and stationary portion of the container. A float pole is connected by a line to the life buoy and disposed in the container for substantially simultaneous release with the life buoy. The life buoy is formed with ends curved in horseshoe manner and a drogue and signal generator, connected by a line to the life buoy, may be stored between the buoy ends.

3,754,292
APPARATUS FOR MAKING A DRILL SCREW WITH AN EXTRUDED POINT
Bernard F. Reiland, 1616 Roncevalles Ave., Rockford, Ill.
Division of Ser. No. 4,940, Jan. 22, 1970, Pat. No. 3,683,436.
This application May 26, 1972, Ser. No. 257,385
Int. Cl. B23g *9/00*
U.S. Cl. 10—9 3 Claims

A method of making a drill point, self-thread-forming screw comprises cold forging the work-entering end of a screw blank

between laterally movable complementary die members which completely enclose the blank end to achieve unrestricted longitudinal extrusion of the complete cross section of the screw and at the same time controlled lateral expansion thereof. Offset jaws on the die members form a pair of flutes extending the length of the drill point on opposite sides



thereof and land portions therebetween. Such land portions are provided with a hook at the work-entering extremities of the forward faces thereof. Due to control of the lateral expansion of the blank end, no flashings are formed on the drill point, which requires only a sharpening operation for completion.

3,754,293

PORTABLE BRIDGE SECTION CONNECTION

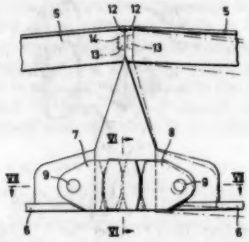
Gerhard Wagner, Mainz-Lerchenberg, and Walter Kinzel, Mainz, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln-Deutz, Germany

Filed Apr. 12, 1971, Ser. No. 133,154

Claims priority, application Germany, Apr. 11, 1970, P 20 17 489.4

Int. Cl. E01d *1/00*

U.S. Cl. 14—1 **3 Claims**



A bridge system adapted to be mounted on a vehicle, which comprises two bridge sections adapted selectively from a transport position in which they are located one above the other to be moved into the bridging position in which said bridge sections are in longitudinal alignment with each other, and in which the lower chord means of the bridge sections are equipped with jaw clutches adapted vertically to be inserted into each other for interlocking said bridge sections in their bridging position, those head ends of the upper chords of said bridge sections which in bridging position of said bridge sections contact each other being provided with strip means for preventing vertical displacement of the bridge sections in bridging position thereof.

3,754,294

CARPET SWEEPER

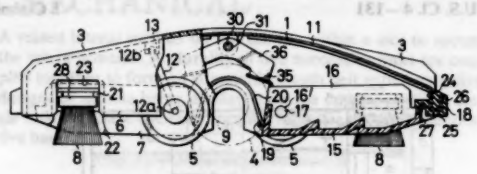
Hiroshi Fukuba, 2-320-82, Matsugaoka, Nagareyama, Chiba, Japan

Filed Jan. 3, 1972, Ser. No. 214,825

Int. Cl. A47l *11/33*

U.S. Cl. 15—42 **3 Claims**

An arcuate frame top plate is formed with a longitudinally elongated groove for receiving the lower end of a handle. Box frames for supporting friction wheels at the opposite ends of a rotary brush and rolling wheels for driving the rotary brush are fixed to the opposite sides of the top plate. Dust receptacles pivoted to the opposing inner sides of the box frames are pro-



vided on their opposite sides with auxiliary brush supports which are exposed from the opposite sides of the box frames and are manipulated for opening the receptacles when the dust therein is discharged.

3,754,295

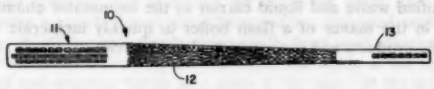
TWO-HEADED BRUSH

Richard L. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Johnson, Iowa

Filed Feb. 1, 1972, Ser. No. 222,606

Int. Cl. A46b *9/04*

U.S. Cl. 15—167 R **2 Claims**



A two-headed brush particularly useful as a toothbrush havin a tapered design with two groups of bristles, one extending laterally from a relatively broad head portion and the other extending laterally from a narrow end portion. A roughened central handle portion is provided for a firm grip.

3,754,296

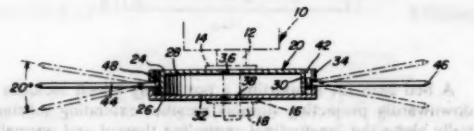
ROTARY FLAIL TYPE CHIPPING HEAD

George N. Talbert, 102 Pine, Abilene, Kans.

Filed Dec. 16, 1971, Ser. No. 208,711

Int. Cl. B44d *3/16*

U.S. Cl. 15—236 R **8 Claims**



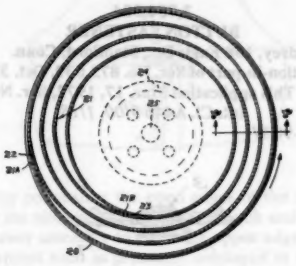
A cylindrical body for concentric mounting on a driven rotary shaft and including peripherally spaced radial openings outwardly from which tine-type elongated members project. The tine members extend generally radially of the cylindrical body and are supported at their inner ends for lateral swinging of the outer ends of the tines in all directions to limit positions of deflection displaced approximately 10° relative to a radial disposition. Further, the radial innermost ends of the tines are supported from the cylindrical body member in a manner such that the tines will be biased, by centrifugal force, to radially extending positions upon rapid rotation of the body about its center axis.

3,754,297

ROTARY DISC CUTTING DEVICE

Anthony B. Metz, 129 Chester Ave., Chelsea, Mass.

Continuation-in-part of Ser. No. 107,328, Jan. 18, 1971, abandoned. This application Mar. 13, 1972, Ser. No. 234,248
Int. Cl. B44d 3/16
U.S. Cl. 15—236 R 12 Claims



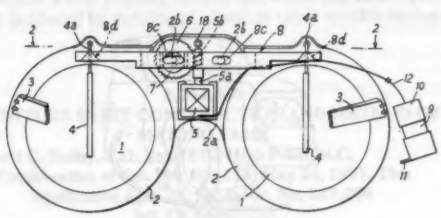
Rotary disc devices are disclosed for use in removing paint or other surface layers from or otherwise treating the surfaces of wood, metal, and brick. Each device consists of a disc having a coiled blade length of the band saw type embedded therein with its teeth exposed.

3,754,298

SPECTACLES, GOGGLES AND THE LIKE

Raymond Louis Menil, Bois-Colombes, France, assignor to Tagada S. A., Hauts - de - Seine, France

Filed Mar. 18, 1971, Ser. No. 125,725
Int. Cl. B60s 1/22
U.S. Cl. 15—250.3 2 Claims



Spectacles, goggles and the like having glasses or lenses comprise wipers therefore mounted pivotably in front of an outer surface thereof, a frame, and driving means for the wipers mounted in said frame. To provide a toy in the form of a practical joke, the mounting may have an orifice forming a nozzle for projecting a liquid, said orifice comprising a ferrule for connection to a conduit for the liquid.

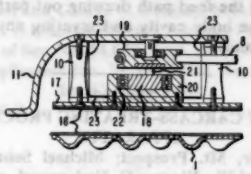
3,754,299

SUCTION CLEANING MACHINE

Richard E. Turner, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1971, Ser. No. 209,136
Int. Cl. A47l 9/04
U.S. Cl. 15—363 6 Claims

An improved suction cleaning machine incorporates a perforated carpet contacting plate exhibiting carpet contacting projections on the rug side, and means to move said plate in a horizontal elliptical, but non-rotating path over an amplitude of 1/32 inch to one-half inch at a frequency of 500 to 14,000 cycles per minute with suction applied to the perforations in the plate.

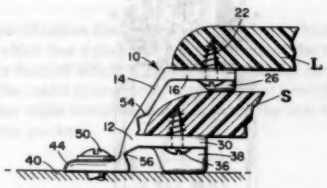


3,754,300

COMMODE HINGE

Charles E. Shepherd, P.O. Box 9445, Houston, Tex.

Filed Aug. 31, 1971, Ser. No. 176,520
Int. Cl. E05d 7/00
U.S. Cl. 16—150 5 Claims



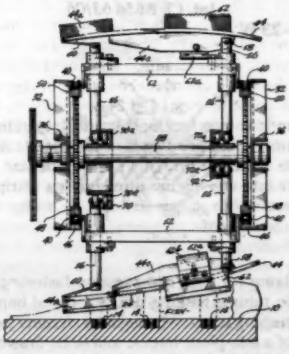
A hinge for a commode or the like comprising a plurality of flanges for mounting a commode lid and seat to a commode bowl. Longitudinal grooves are formed in the hinge for providing hinge axes for said lid and seat for pivotal movement of these members relative to the commode bowl.

3,754,301

APPARATUS FOR EXTRACTING VISCERA FROM FISH

Eldon L. Grimes, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Aug. 16, 1971, Ser. No. 172,162
Int. Cl. A22c 25/14
U.S. Cl. 17—58 14 Claims



An arcuate segmental rocker actuated by cam-controlled carriage elements squeezes out the viscera. Rolling action of the rocker is effected by cam controlled programming of

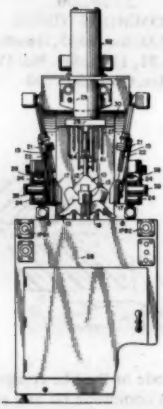
depression and elevation of the respective end portions of the rocker sequentially as the fish is advanced on a support table. Completion of extraction is assured by a rotary brush means stationed along the feed path drawing out partially extruded viscera from the body cavity and severing any vestigal connecting membranes.

3,754,302

POULTRY CARCASS-TREATING PROCESS AND APPARATUS

James M. Blair, Mt. Prospect; Michael Sebring, Downers Grove, both of Ill.; Warren H. Underwood, and William P. Bley, both of Minneapolis, Minn., assignors to Armour and Company, Chicago, Ill.

Filed Jan. 14, 1971, Ser. No. 106,492
Int. Cl. A22c *21/00*
U.S. Cl. 17—45 **9 Claims**



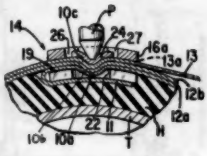
A dressed raw poultry carcass, with its front portion engaging an abutment, is pressed from the rear to clamp the carcass against the abutment, and side rails carry arms rearwardly to engage the knees of the bird, thus positioning the carcass firmly for fluid injection or other treatment.

3,754,303

HIGH COMPRESSION BAND CLAMP

Leonard J. Pollock, Oceanside, N.Y., assignor to Ideal Corporation, Brooklyn, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,550
Int. Cl. B65d *63/06*
U.S. Cl. 24—23 W **7 Claims**



A band clamp for high compression fastening of a hose or other flexible tubing, making use of a metal band adapted to encircle the tubing once or twice from an inner band end fixed to the base of a one-piece buckle and to be drawn through and interlocked with the buckle under high tension, is provided with a buckle structure enabling the band to be tensioned and locked in place by any of the conventional lock-up procedures. The buckle is made so rigid that the band can be tightened by a tool gripping its free end and thrusting against the buckle, and then locked by being bent up against and cut off over the front edge of the top wall of the buckle; yet that wall is made with a deformable thinned central section which, when the band has been similarly tightened, can be punched to force it and underlying portions of the band into an interlocking depressed configuration, whereupon the free end of the band may be broken off along said front edge.

3,754,304

BUTTON FASTENER

Henry J. Modrey, 158 Eagle Dr., Stamford, Conn.

Continuation-in-part of Ser. No. 873,039, Oct. 31, 1969, abandoned. This application Mar. 17, 1972, Ser. No. 235,552
Int. Cl. A44b *9/00, 1/18*
U.S. Cl. 24—90 W **17 Claims**

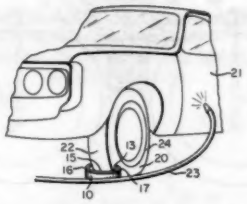
A button fastener for attaching an item, for instance a button to sheet material and particularly to fabric, by placing the button on one side of the fabric and by looping a flexible filament secured on one end to an elongate sleeve successively through the fabric, the holes of the button and again through the fabric. The filament is then threaded through the sleeve and pulled as tight as desired. The sleeve wall locks the filament portion now located within the sleeve in its tightened position, thereby securing the button flatly to the fabric with the sleeve anchored flatly against the opposite side of the fabric.

3,754,305

AUTOMOBILE TIRE CLAMP THAT PROVIDES FREE HOSE MOVEMENT AROUND A CAR

John H. Kline, 58 Holly St., Wilmington, Del.

Filed May 27, 1971, Ser. No. 147,476
Int. Cl. A44b *21/00*
U.S. Cl. 24—256 **3 Claims**



A clamp that can be attached to the tire of an automobile to provide a smooth curved substantially verticle wall in front of and to the sides of that part of the wedge-shaped space formed by the tire and the ground that tends to wedge and stop the movement of a hose as it is pulled around the front or rear of a car, as well as the combination of the clamp and the tire.

3,754,306

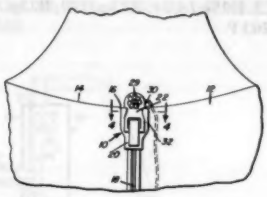
ANCHOR FOR ZIPPER HANDLE

Joseph Cirone, 41 Maxwell St., Jersey City, N.J.

Filed Aug. 4, 1971, Ser. No. 168,842
Int. Cl. A44b *19/30, 19/26*
U.S. Cl. 24—205.14 R **2 Claims**

A zipper construction in which the slider is provided with a spring clip structure that retains the operating handle for the slider in a longitudinally extending position above the slider

with a pull line attached to the handle by which the slider may be moved vertically to open and close the zipper. The handle on the zipper slider in its upwardly extending position overlying and concealing the top edge of an opening in a garment such as an opening in the neckline of a dress or similar gar-

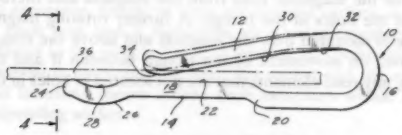


ment thereby concealing the open edges of the neckline and eliminating the necessity of providing a hook and eye or other similar fastener assembly to close the upper edge of an opening in a garment such as presently employed in conventional garment construction.

3,754,307
GARMENT CLIP

Monroe Froehlich, Jr., South Salem, N.Y., assignor to DHJ Industries Inc., New York, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,691
Int. Cl. A44b *21/00*
U.S. Cl. 24—255 TV **1 Claim**

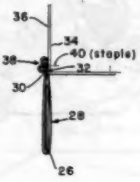


A garment clip for readily receiving garments formed of very flexible material such as double knit garments and holding them in a firm gripping manner and which can be inexpensively produced by molding of plastic or other suitable material.

3,754,308
FURNITURE SKIRT CONSTRUCTION AND METHOD OF MAKING SAME

Herbert C. Staley, P.O. Box 1812, High Point, N.C.

Continuation of Ser. No. 146,178, May 24, 1971. This application Apr. 24, 1972, Ser. No. 247,204
Int. Cl. B68g *7/00*
U.S. Cl. 29—91.1 **5 Claims**

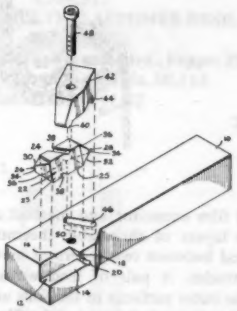


An upholstered furniture skirt construction and method for making same wherein a U-shaped curtain with evenly and upwardly positioned first and second edges is secured adjacent the front surface of the upholstered furniture article, and a double welt is extended continuously along and over these edges so that the skirt hangs substantially vertically from the front surface of the furniture article.

3,754,309
CUTTING INSERT AND CLAMPING ARRANGEMENT THEREFOR

Dennis G. Jones, and George G. Barkley, both of Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 74,649, Sept. 23, 1970, abandoned. This application Jan. 28, 1972, Ser. No. 221,765
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 R **11 Claims**

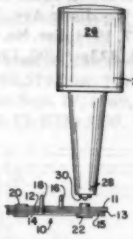


The specification discloses a cutting insert which is invertable and which has a diagonal notch in each of the top and bottom sides thereof which is engaged by a clamp element which presses the insert downwardly into a pocket provided therefor in a holder while simultaneously drawing the insert against the sides of the pocket.

3,754,310
METHOD OF MAKING AN ELECTRICAL ASSEMBLY FASTENED WITH THERMOPLASTIC EYELET

Gerald J. Shea, Buffalo Grove, Ill., assignor to Underwriters Safety Device Co., Chicago, Ill.

Filed July 29, 1971, Ser. No. 167,234
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **5 Claims**

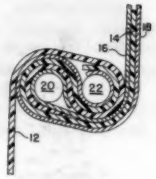


The assembly includes at least two pieces of material, each having a hole therein aligned with the hole in the other piece of material, and a plastic eyelet positioned in the holes and having a radially extending flange on one end thereof which engages one piece of material and a rolled over rim at the other end thereof which engages the other piece of material to hold the pieces of material together. The method includes the steps of: assembling the pieces of material with a plastic sleeve positioned in the holes, the sleeve having the radially extending flange on one end with the other end of the sleeve extending beyond one piece of material; holding the flange against one piece of material while raising the temperature of the extending end of the sleeve above its softening temperature; and simultaneously shaping at least a aart of the extending end of the sleeve into the rolled over rim which extends radially from the extending end of the sleeve and in abutment with the other piece of material.

3,754,311
WOUND FILM CAPACITOR AND METHOD OF WINDING SAME ABOUT ITS LEAD WIRES

Charles C. Rayburn, 8501 West Higgens Rd., Falls Church, Va.

Division of Ser. No. 16,834, March 5, 1970, Pat. No. 3,638,086. This application Oct. 7, 1971, Ser. No. 187,570
Int. Cl. H01g 13/00
U.S. Cl. 29—25.42 6 Claims

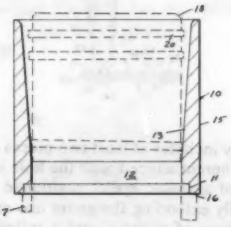


Wound film capacitor and method of making wherein at least two layers of shrinkable thermoplastic dielectric are sandwiched between two layers of metalized or, preferably, foil, electrodes. A pair of lead wires are then positioned against the outer surfaces of the foils and rotated together in the manner of mandrels to wind the film and foil layers into a capacitor body. Flat, or otherwise deformed portions formed on a short portion of one end of each lead wire which is outside of the capacitor during winding are then drawn into the center of the capacitor by pulling on the other end of the wires. The capacitor body is then heated to shrink the dielectric and thereby cause the leads to be held in extremely firm engagement with the foil layers. Since the foils encircle at least 270° of the periphery of the lead wires, a very firm, low resistance, pressure bond is made which renders the capacitor able to withstand substantial amounts of heat applied during a soldering operation. The elimination of mandrel holes allows the capacitor to be extremely compact and usable for many applications without the addition of additional thicknesses of sealing materials.

3,754,312
RING COMPRESSOR

Felix A. Komorek, 1960 Woodlawn Ave., Erie, Pa.

Filed Oct. 27, 1971, Ser. No. 193,032
Int. Cl. B23p 19/00, 15/10
U.S. Cl. 29—200 P 1 Claim

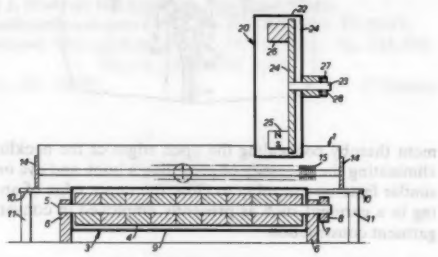


A ring compressor especially suitable for use in installing pistons with rings in removable cylinders of internal combustion engines, pumps and the like. The compressor is made of a cylindrical tube having an inside bore with an inside diameter that is substantially equal to the inside diameter of the sleeve in which a piston is to be installed. The bore of the compressor flares out to a larger diameter at its distal end and has a counterbore that is suitable to receive the end of the cylinder on the engine. The counterbore can rest on the end of the cylinder of the engine to line up the bore of the compressor with the cylinder so that the piston with rings on it slides smoothly into place through the compressor.

3,754,313
LOCATING ELONGATE MAGNETIC-ELEMENTS

Malcolm William McCulloch, 2 Phillip Ave., Swanley, England

Filed Dec. 6, 1971, Ser. No. 205,231
Claims priority, application Great Britain, Dec. 9, 1970, 58,425/70
Int. Cl. H05k 13/04; B23q 7/10; B23p 19/00
U.S. Cl. 29—203 P 10 Claims

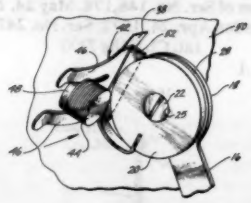


A machine for locating reed relay contact elements in holes in an operable trough which opens to allow the reed elements to drop out of it comprises magnets mounted for rotation below the trough so that the reed elements rotate under the influence of the magnetic field from the magnets and thereby locate in the holes in the trough. A further rotating magnet structure is mounted over the magnets and above the trough to remove, on movement of the trough between it and the magnets, any reed elements that are not located in holes in the trough.

3,754,314
AUTOMOBILE DOOR LOCK REMOVAL TOOL

Thomas J. Snorgrass, 2436 Adelia Ave., South El Monte, Calif.

Filed Sept. 10, 1971, Ser. No. 179,321
Int. Cl. B25b 27/20
U.S. Cl. 29—225 13 Claims



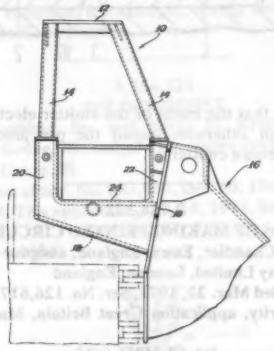
A tool for removing the clip that holds the key barrel of an automobile door lock in place includes a pair of clip-straddling members at the end of an elongated handle. The members are sized to fit inside the door and are spaced apart to form a slotted opening between them that permits the members to straddle a projecting tongue portion of the clip. A keeper, preferably an elongated leaf spring, extends lengthwise adjacent to the slotted opening and fits around the clip to hold it between the clip-straddling members after the clip is removed from the key barrel.

3,754,315

METHOD AND MEANS FOR ATTACHING PROTECTION STRUCTURE TO A VEHICLE FRAME

Theodore A. Heitman, Libertyville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Feb. 24, 1972, Ser. No. 228,859
Int. Cl. B23p 17/00, 19/00, 19/02
U.S. Cl. 29—400 8 Claims



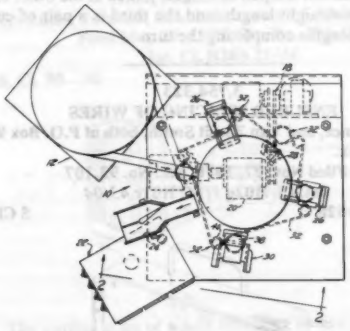
Method and means for attaching a rollover protection structure for protecting an operator of a vehicle, said structure having four posts secured to a top plate and positioned to generally define the confines of an operator's compartment. An extension, having at least one tapered surface, is secured to each post and is receivable by a complementary socket secured to the vehicle frame. Vibration and noise dampening material is positioned between the socket and the extension and fastening means secure each extension within the corresponding socket.

3,754,316

AUTOMATIC GAGING APPARATUS OF MODULAR CONSTRUCTION AND METHOD OF MANUFACTURE

Roy Jerome Jacques, 303 Porter Dr., Englewood, Ohio

Filed June 22, 1972, Ser. No. 265,407
Int. Cl. B23p 17/00, 19/00
U.S. Cl. 29—400 4 Claims



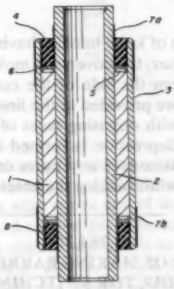
A rotary transfer type of automatic gaging system is disclosed which allows the use of standarized modular components in fabricating gaging systems for a variety of applications requiring a variety of gaging and/or other motions in varying numbers and at varying numbers of work stations. The system includes an endless chain or belt drive extending about the rotary index table and engaging a series of standard cam modules located at each work station, rotatable about axes parallel to the table axis so that their number may be varied according to design requirements. Each of the cam modules are capable of driving one, two, or three motion modules, providing an output motion in the vertical direction from below, or vertically from above the table, or in the horizontal direction, respectively. These motion modules are adapted to nest together at each cam module to allow use of one, two, or three distinct motions at each station.

3,754,317

LONGITUDINAL MULTI-ELASTOMER RESILIENT BUSHING

John E. M. Taylor, 27900 Fairmount Blvd., Pepper Pike, Ohio

Filed July 24, 1970, Ser. No. 58,113
Int. Cl. B23p 11/02
U.S. Cl. 29—451 21 Claims



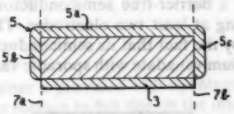
Forcible assembly of a short elastomeric insert concentrically between an inner and an outer rigid cylinder and subsequent casting or pressing in place of — additional longitudinally arrayed elastomers of selected physical properties so as to fill remaining annular spaces after emplacement of small, highly-compressible, deformation-control elastomers, the entire assembly providing an economical, long-life, resilient bushing.

3,754,318

METHOD FOR MAKING PARTIALLY-SOLDER-CLAD METAL

George P. Trost, 34 Forest St., North Attleboro, Mass.

Division of Ser. No. 592,579, Nov. 7, 1966, Pat. No. 3,482,303.
This application Sept. 19, 1969, Ser. No. 871,231
Int. Cl. B23p 3/00, 17/00
U.S. Cl. 29—460 3 Claims



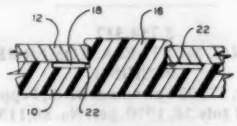
Among the several objects of the invention may be noted the provision of a method for manufacturing a solder-clad metal composite which does not require application and subsequent removal of a temporary stop-off material in areas of metal which are not to be clad with the solder; the provision of a method for manufacturing multilayer metallic members comprising a solderable metal layer having selected portions of the layer clad with solder by a hot-dipping process and without requiring subsequent removal of any stop-off material; and the provision of clad metal produced according to the methods of the invention. Other objects and features will be in part apparent and in part pointed out hereinafter.

3,754,319

METHOD OF FABRICATING A KNIFE HANDLE

Nilo M. Miori, Solvey, N.Y., assignor to Camillus Cutlery Company, Camillus, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,519
Int. Cl. B21d 39/00; B23p 11/00
U.S. Cl. 29—509 5 Claims



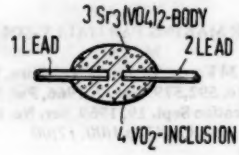
In the fabrication of knife handles having a plastic cover attached to a metal liner, the covers are molded with at least two studs projecting from the side of the cover which faces the metal liner. Holes are provided in the liner through which the studs are inserted with opposing faces of the cover and liner flush. An annular depression is formed in the cover around each stud to accommodate any burrs or protrusions of the metal liner formed while making the holes for the studs.

3,754,320

METHOD OF MAKING BARRIER-FREE SEMICONDUCTOR SWITCHING DEVICE

Max Guntersdorfer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 828,199, May 27, 1969, Pat. No. 3,614,559. This application Oct. 14, 1970, Ser. No. 80,742
Claims priority, application Germany, May 27, 1968, P 17 64 373.1
Int. Cl. B01j 17/00
U.S. Cl. 29—576 5 Claims



Described is a barrier-free semiconductor component for switching, having at least two electrodes. The component is characterized by the fact that its semiconductor body is comprised of strontium vanadate with sporadic vanadium oxide inclusions.

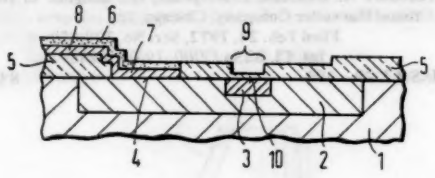
3,754,321

METHOD OF PRODUCING A SILICON TRANSISTOR DEVICE

Helmuth Murrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Erlangen, Berlin, Germany

Filed Mar. 18, 1971, Ser. No. 125,701
Claims priority, application Germany, Mar. 19, 1970, P 20 13 220.1
Int. Cl. B01j 17/00
U.S. Cl. 29—578 7 Claims

To contact a silicon transistor produced according to the method of planar technique, the electrode which contacts the base zone is first mounted and fastened by a metallurgical process upon the silicon of the base zone. Then, the emitter electrode is mounted upon the emitter zone and so connected



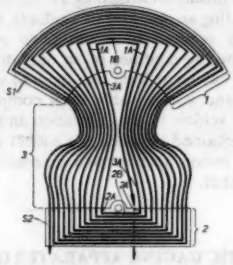
with the same that the metal of the emitter electrode cannot short circuit or otherwise impair the p-n junction of the emitter zone (entire emitter).

3,754,322

METHODS OF MAKING PRINTED CIRCUIT COIL

David Horace Chandler, Essex, England, assignor to The Marconi Company Limited, London, England

Filed Mar. 22, 1971, Ser. No. 126,617
Claims priority, application Great Britain, May 14, 1970, 23,332/70
Int. Cl. H05k 3/22
U.S. Cl. 29—625 2 Claims



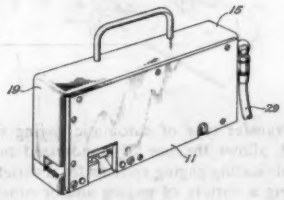
A printed circuit coil for a cathode ray tube is shaped so that it can be bent to form a flared coil. When the coil is flat the turns of the coil each consist of three portions. The first portion comprises a pair of conductive lengths diverging towards one end of the coil and joined there by an arcuate length, the second is a pair of lengths joined at the other end of the coil by a straight length, and the third is a pair of curved conductive lengths completing the turn.

3,754,323

ENSURED SPLICING OF WIRES

Albert L. Pence, and Van Zandt Smith, both of P.O. Box 9429, Austin, Tex.

Filed Nov. 27, 1970, Ser. No. 93,107
Int. Cl. H02g 1/14; H01r 43/04
U.S. Cl. 29—628 5 Claims



Method and apparatus for splicing conductors characterized by inserting the conductors to be spliced within a

crimpable connector means, passing penetrating radiation through the connector means and condutors, monitoring a quantum level of a function that is responsive to the attenuation of the penetrating radiation and crimping the connector means to join the conductors only if the penetrating radiation is attenuated an amount sufficient to indicate proper insertion of the conductors, indicated by the quantum level of the function being in a predetermined scalar direction from a predetermined level. Also disclosed are specific types of penetrating radiation; for example, energy and nuclear particles; and specific structures.

3,754,324
SOLDER RESIST

John H. Krehbiel, Sr., and Kerry M. Krafthefer, both of Downers Grove, Ill., assignors to Molex Products Company, Downers Grove, Ill.

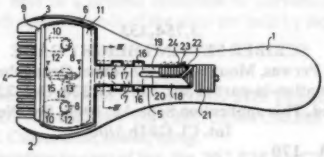
Division of Ser. No. 883,859, Dec. 10, 1969, Pat. No. 3,686,625. This application Oct. 15, 1971, Ser. No. 189,697
Int. Cl. H01r 9/00
U.S. Cl. 29—630 D 14 Claims

A solder resist, i.e., a material that is not wet by and hence not adhered to by solder is applied to a portion of a sheet metal blank. The sheet metal blank is stamped and formed to produce a substantially cylindrical female terminal for receipt of a plug-in male terminal as of a solid state device. The terminal is flow soldered in place in a printed circuit board, and the solder resist prevents solder from adhering in areas where it would adversely affect operability of the female terminal.

3,754,325
HAIR TRIMMING DEVICE

Evert Anton Tornvall, Granholmsgatan 11, Malmo, Sweden

Filed May 24, 1972, Ser. No. 256,433
Int. Cl. B26b 21/14
U.S. Cl. 30—30 2 Claims

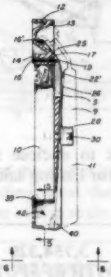


The cutting edge of a hair trimming device is engaged by a cover member slidable on a base member and provided with a resilient laterally and vertically movable means which upon movement of the cover member towards the toothed front edge of the base member laterally engages catch teeth on the base member to adjust the cutting edge in a plurality of operating positions at various distances from the toothed front edge whereas said means is vertically disengageable from the catch teeth to enable the cutting edge to be moved in the opposite direction.

3,754,326
COMBINATION RAZOR, RAZOR TRAY AND BLADE DISPENSER

Martin Glaberson, Ardsley, N.Y., assignor to Warner Lambert Company, Morris Plains, N.J.

Filed Dec. 6, 1971, Ser. No. 205,023
Int. Cl. B26b 21/24, 21/40; B65d 85/54
U.S. Cl. 30—40 11 Claims

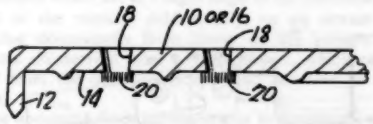


The specific disclosure provides a combination of a bonded blade cartridge holder having a handle and a cartridge having at least one cutting edge at one end of the handle, a blade cartridge dispenser, and a razor tray. The tray comprises an elongated member, an opened receptacle at one end of the elongated member, and means including a wall extending downwardly from said one end for guiding the dispenser transversely of the elongated member into position beneath the elongated member. The tray further comprises means extending downwardly from the elongated member for biasing the dispenser into abutting engagement with the guiding means, and means extending upwardly from the elongated member for releasably engaging the handle with the at least one cutting edge positioned in the receptacle.

3,754,327
COOKIE CUTTERS

Mary Ann Lisa, Hoboken, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,781
Int. Cl. B26b 3/00
U.S. Cl. 30—316 1 Claim



A cookie cutter is provided with openings extending inward from the outer surface to felt tips on the inner cookie contacting surface. Edible liquid coloring material can be inserted into the openings whereby each cookie is automatically decorated as it is cut from sheet of cookie dough.

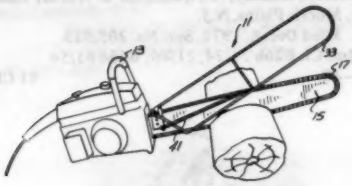
3,754,328
GUARD FOR POWER CHAIN SAW

William R. Knerr, 11737 E. Muskrat Rd., Carson City, Mich.

Filed May 1, 1972, Ser. No. 249,102
Int. Cl. B27b 17/02
U.S. Cl. 30—382 6 Claims

For a power chain saw having a guide bar and chain saw element, a guard which includes brackets mounted on said guide bar upon which a framework is pivotally mounted to protec-

tively enclose the chain saw element throughout its length and height together with stops on said brackets for initially maintaining the framework to enclose said chain saw element together with a spring for biasing said framework into normal protective position.



3,754,329
RAZOR BLADE WITH RF SPUTTERED COATING

George C. Lane, Danbury, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

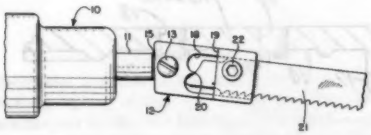
Division of Ser. No. 680,794, Nov. 6, 1967, Pat. No. 3,635,811. This application Sept. 29, 1971, Ser. No. 184,848
Int. Cl. B26b *21/54*
U.S. Cl. 30—346.53 12 Claims

The specific disclosure provides for a razor blade comprising at least one cutting edge portion defined by two face portions having a narrow included angle therebetween. At least a portion of each of the face portions has an RF sputtered coating of a hard metal having a thickness of less than about 600 Angstrom units. The disclosure also provides for coating the sputtered metal coating with a sputtered coating of an organic plastic material having a thickness of from about 200 to about 2000 Angstrom units.

3,754,330
SAW CHUCK

Charles L. Anderson, and Andrew Anderson, both of Rt. 1, Box 198, Antioch, Ill.

Filed June 5, 1972, Ser. No. 259,799
Int. Cl. B27b *11/06*
U.S. Cl. 30—392 5 Claims



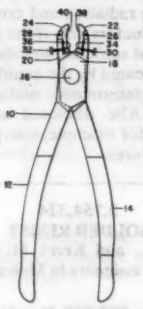
A chuck for a portable reciprocating power saw wherein the chuck is of a minimum length and will firmly hold saw blades of various widths.

3,754,331
UNIVERSAL DENTAL EXTRACTION FORCEPS

Frank A. Agnone, 327 N. Washington Ave., Scranton, Pa.

Filed June 12, 1972, Ser. No. 261,634
Int. Cl. A61c *3/10*
U.S. Cl. 32—62 4 Claims

Dental extraction forceps which are adjustable to provide fitted contact with the surface of a tooth include pivotal handles, each having a tooth-engaging jaw. At least one of the tooth engaging jaws carries an adjustable beak which is pivotally connected to the jaw and which has a tooth-engaging surface which can be positively moved into fitted contact with a tooth surface by means of an adjusting screw.



3,754,332
TREATMENT MEMBER

Lamar G. Warren, Jr., 4100 Hospital Dr., Plantation, Fla.

Filed Sept. 9, 1970, Ser. No. 70,771
Int. Cl. A61c *15/00, 5/12;* A61f *13/00*
U.S. Cl. 32—64 2 Claims

A member for use in the treatment of caries in the teeth with fluoride or other chemicals which are carried by a section of the member which may be detachable. The member is worked between two teeth at a contact area to place the detachable section in contact with the teeth. The chemical agent is applied to the detachable section either before or after it is placed in contact with the teeth. The detachable section remains between the teeth when the rest of the member is removed, and preferably dissolves in the mouth when wet.

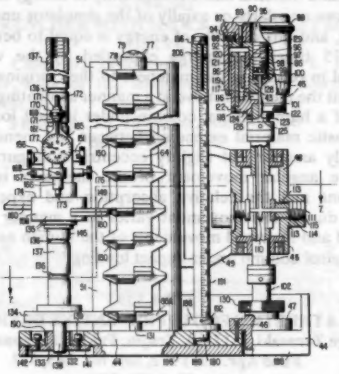
3,754,333
SCRIBER SETTING HEIGHT GAGE

Ludwig F. Perwas, Mountainview Avenue, Orangeburg, N.Y.

Continuation-in-part of Ser. No. 501,220, Oct. 22, 1965, abandoned. This application Sept. 12, 1968, Ser. No. 759,340
Int. Cl. G01b *5/00*
U.S. Cl. 33—170 3 Claims

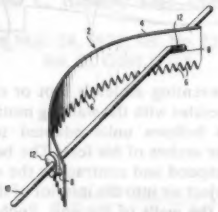
A device for checking dimensions of machine parts or the like, consisting of a dual inter-dependent keyed linear structures having inter-connected operating elements to maintain the unique multiple gage stack feature of my U.S. Pat. No. 3,180,029 with the use of much smaller gage blocks, to accommodate an extra large micrometer thimble graduated about its circumference to one hundred thousandths in ten thousandths of an inch, permitting when the micrometer screw thread is 10 threads to an inch to obtain a reading within one turn of the thimble when the one hundred thousandths gage blocks are utilized and within ten turns when the one inch gage blocks are used. A scriber setting mechanism is in-

corporated to allow the setting of a scriber, that is secured in a standard height gage, to a required height by utilizing the spring loaded scriber setting arms instead of the spring loaded



dial indicator point that would be held in another standard height gage. Although the gage stack and scriber setting unit is extended the micrometer thimble remains within easy reach for comfortable manipulation.

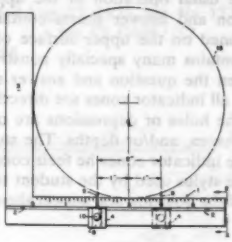
3,754,334
GARLAND MARKER
Ray Haapala, Rt. 2, Box 270, Dassel, Minn.
Filed July 30, 1971, Ser. No. 167,664
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 T **3 Claims**



For marking garlands on cakes, there is an elongate, flexible plastic strip having a row of teeth along one edge. The strip is adjustably held in a desired condition of curvature by a rod upon which opposite ends of the strip are held by stops.

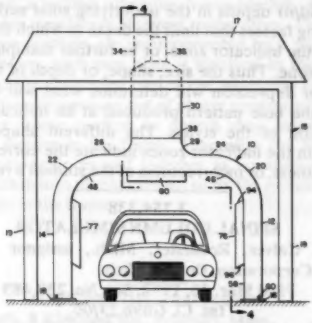
3,754,335
INSTRUMENT FOR DETERMINING THE DIAMETER OR RADIUS OF AN OBJECT OF CIRCULAR CROSS SECTION
Delbert D. Culbertson, Salem, Oreg.
Continuation-in-part of Ser. No. 862,835, Oct. 1, 1969, abandoned. This application Apr. 7, 1971, Ser. No. 132,156
Int. Cl. G01b *5/08*
U.S. Cl. 33—178 R **4 Claims**

One of a pair of interconnected arms, defining straight edges arranged angularly to provide an included angle of less than 180°, is graduated to form a scale of linear measurement which increases in magnitude outward from the apex of the angle. An index pin is mounted for movement along the scale and projects inward thereof for engagement with an object of circular cross section contacting the straight edges of both arms. The pin is moved along the scale into contact with the object at both sides of the point of contact of the object with the straight edge of the scale arm. The sum of the scale readings at said points of contact of the pin with the object is



related to the diameter of the object by some whole integer or fraction thereof, depending upon the magnitude of said included angle and the type of said scale.

3,754,336
VEHICLE DRYING APPARATUS
Eugene P. Feild, 2213 Mission Blvd., Santa Rosa, Calif.
Filed Aug. 10, 1971, Ser. No. 170,597
Int. Cl. F26b *19/00*
U.S. Cl. 34—230 **9 Claims**



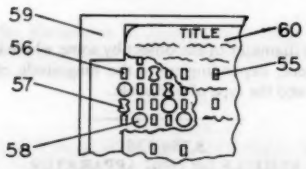
A drying apparatus is provided for blowing water, usually as droplets, from a vehicle, by having the vehicle move along a path between two opposed substantially parallel, high velocity air streams which are at a slight angle to the direction of movement of the vehicle. Additionally, an air stream may be directed downwardly from above on the vehicle. The air streams are derived from a single blower, which can be isolated from the operational area and insulated to minimize noise.

The apparatus finds particular use in combination with automobile car washes in being compact, economically constructed, and providing high efficiency in directing the air stream from the blower to the air outlet, so as to maintain the air pressure.

3,754,337
SELF-INSTRUCTIONAL AND SELF-TESTING APPARATUS
James Richard Harte, 10 West Concord, Kansas City, Mo.
Continuation-in-part of Ser. No. 141,289, May 7, 1971. This application July 29, 1971, Ser. No. 167,368
Int. Cl. G09b *3/08*
U.S. Cl. 35—9 R **2 Claims**

This apparatus is a simple manually operated self-instructional and self-testing apparatus which has a plurality of holes or depressions of different sizes, shapes, and/or different depths in a solid flat surface; an answer sheet or question and

answer sheet; and a stylus with a shaped tip. All question and answer sheets, or answer sheets contain indicator zones that correspond to the multiple choice, true false, or matching questions. In the usual operation of the apparatus answer sheets or question and answer sheets containing indicator zones are positioned on the upper surface of the flat solid structure that contains many specially constructed holes or depressions. When the question and answer sheets are correctly positioned all indicator zones are directly above a hole or depression. The holes or depressions are of several cross sectional sizes, shapes, and/or depths. The student pushes a stylus through the indicator zones he feels correspond to correct answers. The stylus used by the student to perforate the indicator zones of the question and answer sheet is of a special



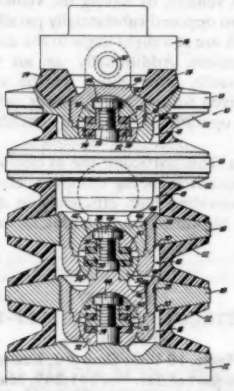
configuration. The stylus is so constructed that when it first penetrates the indicator zone it produces one shape of hole, and if the student is able to push it deeper, or manipulate it further, this first shape is transformed into a second shape, or into a second and then a third shape. The different hole sizes, shapes, and/or depths in the underlying solid surface are the determining factors that limit the depth to which the stylus can penetrate the indicator zone, or be further manipulated in the indicator zone. Thus the size, shape, or depth of the underlying hole or depression will determine what will be the final shape of the hole pattern produced at an indicator zone by manipulation of the stylus. The different shapes of holes produced in the indicator zones indicate the correctness, partial correctness, or incorrectness of the student's responses.

3,754,338

SPINAL COLUMN SIMULATOR

Clyde C. Culver, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1972, Ser. No. 239,489
Int. Cl. G09b *23/00*
U.S. Cl. 35—17 **9 Claims**



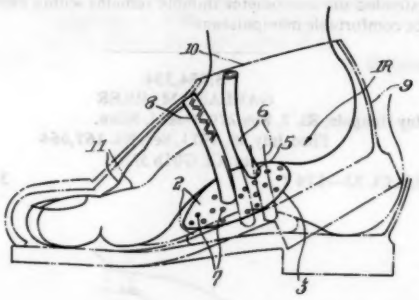
A spinal column simulator includes a plurality of vertebra simulating members connected by respective split-ball and socket connections. Viscoelastic material extends between the members and normally maintains them against relative angular movement, while viscoelastic material located between the ball portions normally maintains the members against movement toward or away from each other and consequent shortening or lengthening of the simulator. This viscoelastic material may be polyvinyl chloride solid, polyvinyl chloride foam, polyethylene foam, or polyurethane foam. The viscoelastic material absorbs a quantity of energy as the members move angularly or axially of the simulator under impact loading, and this quantity of energy is equal to between 1.25 and 2.75 times the energy expended by the viscoelastic material in returning the members to their original positions such that the members move in a manner simulating the movement of a human spinal column under impact loading. The viscoelastic material extending between the members has a generally annular but slightly eccentric configuration such that the angular movement of the members in opposite directions and the relative absorption and expenditure of energy during this movement varies in a manner simulating forward and rearward movements of the human neck portion of the spinal column under impact loading.

3,754,339

ATHLETE'S FOOTS PREVENTIVE DEVICE

Suetsugu Terasaki, 1-11-13, Tenjin, Fukuoka, Japan

Filed Apr. 19, 1972, Ser. No. 245,477
Int. Cl. A43b *7/06*
U.S. Cl. 36—3 B **2 Claims**



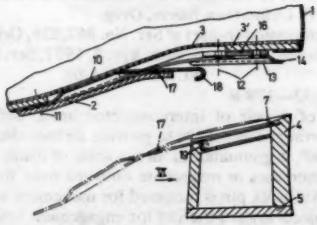
A device for preventing athlete's foot or other eczema is provided which operates with the walking motion of the user's feet and includes bellows units adapted to be arranged beneath the plantar arches of his feet. The bellows units are each operable to expand and contract as the user's heel rises and falls and thus eject air into the interior of the shoe through orifices formed in the walls of the unit. Such ejection of air causes air flows in the shoe interior effectively to prevent any accumulation of moisture or temperature therein.

3,754,340

DEVICES FOR ATTACHING HEELS TO SHOE SOLES

Giuseppe Pais, 15 Chausee de Chatelet, Gilly, Belgium

Claims priority, application Belgium, Sept. 30, 1970, 2503
Filed Aug. 11, 1971, Ser. No. 170,861
Int. Cl. A43b *21/36*
U.S. Cl. 36—42 **1 Claim**



A device for coupling the sole and heel of a shoe comprising a plate which is secured adjacent to the sole and which has a

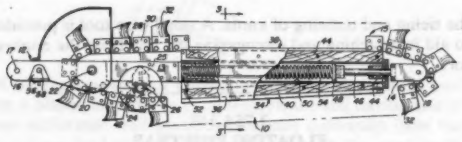
shank extending rearwardly to engage the heel. The shank has a hook which is adapted to be received in a recess in the heel to retain it in position.

3,754,341

CHAIN TRENCHER WITH SHOCK-RESISTANT SILENT DRIVE

Robert H. Caldwell, Jacksonville, and Larry I. Pauline, Alexander, both of Ill., assignors to Grizzly Corporation, Jacksonville, Ill.

Filed Apr. 13, 1972, Ser. No. 243,766
Int. Cl. E02f 5/06
U.S. Cl. 37—86 3 Claims



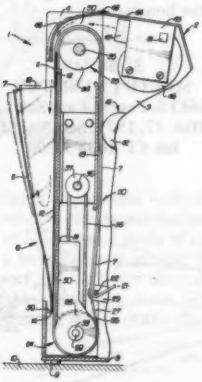
An attachment to the frame of a tractor including auxiliary hydraulic power and having an endless digging chain with a reversible oil-hydraulic drive for light and medium trenching, said chain and sprocket drive having oaken chain guide rails combined with a resilient sprocket mounting structure for silent shock-resistant chain and cutter operation and longer chain and cutter life.

3,754,342

MEANS FOR THE MOVING DISPLAY OF ADVERTISING OR LIKE MATERIAL

James D. Santacroce, 9563 Olympic Blvd., Beverly Hills, Calif., and Neil L. Hanson, 1355 Cambridge Rd., San Marino, Calif.

Filed Mar. 24, 1972, Ser. No. 237,742
Int. Cl. G09f 11/15
U.S. Cl. 40—37 9 Claims



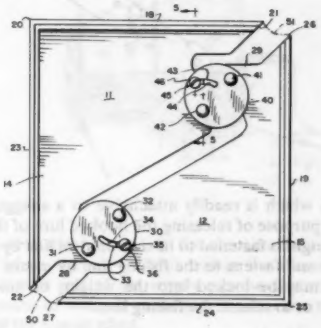
A moving advertising display is provided comprising a series of air receiving pockets carrying like or dissimilar messages on their sidewalls, which pockets are presented in succession at a generally eye level display station being traversed with air, to fill the pockets for responsive movement of the message carrying sidewalls in an attention-getting manner.

3,754,343

QUICK CHANGE DISPLAY FRAME

Samuel J. Popeil, Chicago, Ill., assignor to Popeil Brothers Inc., Chicago, Ill.

Filed Aug. 12, 1971, Ser. No. 171,057
Int. Cl. G09f 11/12
U.S. Cl. 40—155 9 Claims



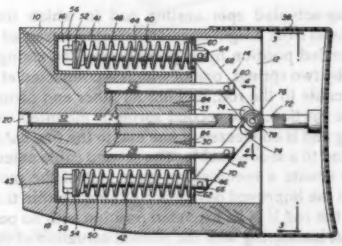
A quick change display frame is shown, especially useful for removably mounting pictures, including a first triangular frame portion, a second triangular frame portion. As shown, each triangular member is identical to the other. The two triangular frame portions are interconnected by a pair of cam plates. As shown, each cam plate is identical to the other. A cam slot and pin constrains one of the triangular frame portions for arcuate movement out of planar contact with respect to the other frame portion to permit easy insertion of a preselected picture in the frame. Thereafter the frame portions are once again moved together as constrained by the cam plate action into planar contact to fix the picture or other display article in the frame.

3,754,344

GUN RECOIL ABSORBER

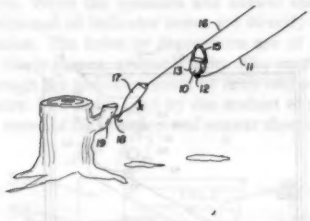
James Spiliotis, 8 Kirkland Rd., Peabody, Mass.

Filed Apr. 28, 1972, Ser. No. 248,609
Int. Cl. F41c 23/00
U.S. Cl. 42—74 10 Claims



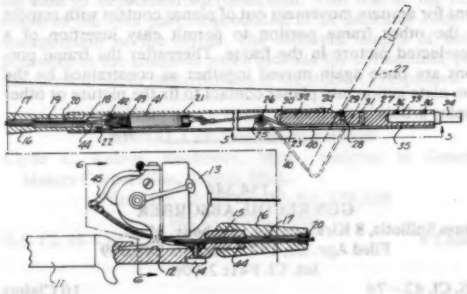
A mechanism is disclosed for absorbing recoil shocks upon the discharge of any ordnance device having a high muzzle velocity, particularly, of the shoulder-support type. A separate movable member encloses the gunstock end and is coupled to spring-tensioned axially actuated means. The end member resting against the shoulder of the user remains substantially stationary while the remainder of the mechanism housed within the gunstock moves to absorb all the energy.

3,754,345
FISHING LINE LURE RETRIEVER
Clyde F. Whitehead, Rt. 1, Box 355, Albemarle, N.C.
Filed Apr. 5, 1972, Ser. No. 241,219
Int. Cl. A01k 97/00
U.S. Cl. 43—17.2 3 Claims



A weight which is readily attachable to a snagged fishing line for the purpose of releasing the hooked lure of the fishing line. The weight is fastened to its own control line by means of a metal eye and fastens to the fishing line by means of a wire bail which may be locked into the weight, or unlocked to fasten about or to release the fishing line.

3,754,346
SPRING-ACTUATED SPIN CASTING ROD
Lester A. Worsham, P.O. Box 559, Cedartown, Ga.
Filed Dec. 14, 1971, Ser. No. 207,917
Int. Cl. A01k 91/02
U.S. Cl. 43—19 2 Claims



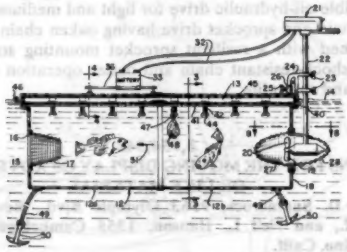
A spring-actuated spin casting rod in which the rod is spring-moved from a right angularly related retracted position to an extended position by a spring force. The spring force is provided by two springs, one of which is connected at one end by a first cable to the rod, and has its other end connected to the handle portion. The second spring is mounted within the first spring and is connected at one end to the first cable and at its other end to a second cable. The second cable extends rearwardly to acuate a reel-locking lever. All of the mechanism relating to the improved device is contained within the hollow rod when the rod is in its extended position with no part of the mechanism interfering with the normal actuation of the rod in spin casting by hand.

3,754,347
FISHING HOOKS, SINKERS, AND LURE APPARATUS
Welbourne D. McGahee, 1896 Collidge Ave., Melbourne, Fla.
Filed Oct. 30, 1972, Ser. No. 302,217
Int. Cl. A01k 91/04
U.S. Cl. 43—44.83 13 Claims

A fishhook, a single-ended or double-ended sinker, a line swivel, and a fishing lure, each having one or more beads on the ends of a shank with one or two connectors whereby the bight of a line may be attached or disengaged rapidly without

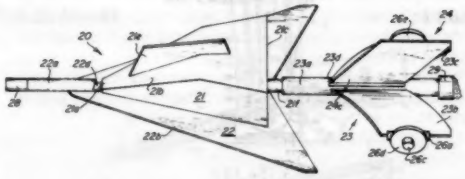
the tieing and untieing of knots. A small wire tool is provided to aid in attaching and disengaging the line from the connector.

3,754,348
FLOATING FISH TRAP
Frank J. Ramsey, P.O. Box 394, Stephenville, Tex.
Filed Sept. 2, 1971, Ser. No. 177,889
Int. Cl. A01k 69/06
U.S. Cl. 43—103 23 Claims



A horizontally elongated housing is equipped at the top thereof with an inflatable pad so that it floats in water. The housing contains bait and a fish entrance cone is provided at one end of the housing. The other end has a water passage with a motor-driven impeller, so that a stream of water is caused to flow through the housing and out of the fish entrance to attract fish which swim against the water stream toward the bait in the housing.

3,754,349
MULTIPLE USE TOY
Leon C. Wallace, 2483 S. Fourth East, Salt Lake City, Utah
Filed Mar. 17, 1971, Ser. No. 125,144
Int. Cl. A63h 33/06
U.S. Cl. 46—17 10 Claims



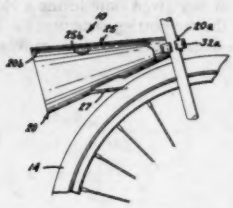
A childrens toy consisting of a number of basic components that can be assembled together in various configurations thereby forming distinctly different toys, with at least ten separate and distinct toys being produced with the components of the present invention.

3,754,350

SOUND PRODUCING ATTACHMENT FOR BICYCLES

Ronald R. Gorke, 1875 N. Barclay St., St. Paul, Minn.

Filed July 10, 1972, Ser. No. 270,079
Int. Cl. A63h 5/00
U.S. Cl. 46—175 R 7 Claims



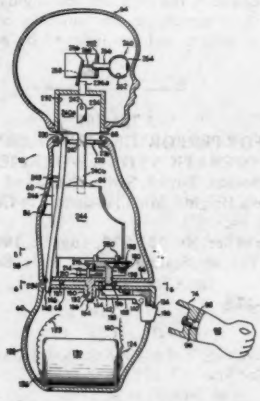
A megaphone-shaped attachment for bicycles constructed from a plastic material (e.g., polyethylene) and having one or more perforated wall portions bendable outwardly from the megaphone for forming a flap engageable with the rear bicycle tire to produce a noise simulating an internal combustion engine.

3,754,351

DOLL

Marvin I. Glass, Chicago; Burton C. Meyer, Downers Grove, and Donald F. Nix, Des Plaines, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,122
Int. Cl. A63h 33/26
U.S. Cl. 46—247 8 Claims



A doll and associated implements with the doll having a movable torso and related driving mechanism for driving the doll through stages of a functional mode of operation simulating the pouring of a beverage and serving food. In addition, the head and eyes of the doll are assocated with driving mechanism so that the head tilts down and the eyes gaze downwardly during certain stages of the pouring and serving function.

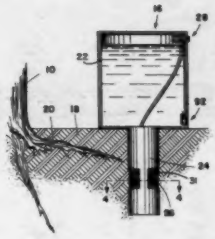
3,754,352

DEVICE FOR WATERING TREES AND OTHER PLANTS

Gary G. Bates, 9735 Harrison Rd., Romulus, Mich.

Filed Apr. 24, 1972, Ser. No. 247,114
Int. Cl. A01g 29/00
U.S. Cl. 47—48.5 12 Claims

A device for the controlled watering of trees and plants. The device includes a sealed reservoir holding a supply of water, a chamber which has porous walls in contact with the soil surrounding the roots of the tree or plant, a supply pipe connecting the chamber to the reservoir and an air pipe extending from the chamber to the atmosphere. The supply pipe is located so that water flows into the chamber from the reservoir only when the water level within the chamber drops below the lower end of the supply pipe so that only a controlled amount of water is permitted to enter the soil around the roots of the tree or plant.

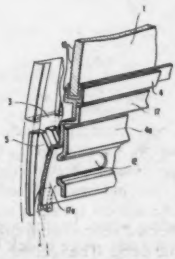


3,754,353

WINDOW LIFTER, ESPECIALLY FOR CURVED SIDE WINDOWS OF MOTOR VEHICLES

Werner Breitschwerdt, Stuttgart-Botnang; Gunter Gmelner; Erwin Kolle, both of Sindelfingen (Wurtt.), and Herbert Bonisch, Darmsheim (Wurtt.), all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 16, 1970, Ser. No. 72,760
Claims priority, application Germany, Sept. 19, 1969, P 19 47 386.0
Int. Cl. E05f 11/52
U.S. Cl. 49—227 19 Claims

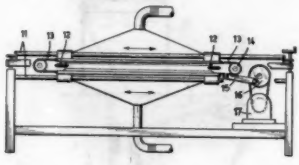


A window lifter, particularly for curved side windows of motor vehicles, in which the window panes are displaceable in lateral guide rails that extend essentially only over the height of the window opening and in which an upright column is arranged on the inside of the window compartment, that is matched to the curvature of the window pane; a guide part is securely connected with the bottom edge of the window pane to permit adjustment of the window in its height by means of the guide column; the guide column itself is constructed as a sectional member open on one side in which a sliding body is guided that is securely connected to the guide part of the pane.

3,754,354
GRINDING DEVICE

Rauno Sakari Franlinna, Minna Canthinkata 56A6, Kuopio, Finland

Filed Sept. 23, 1971, Ser. No. 183,024
Int. Cl. B24b 7/12, 55/06
U.S. Cl. 51—61 4 Claims

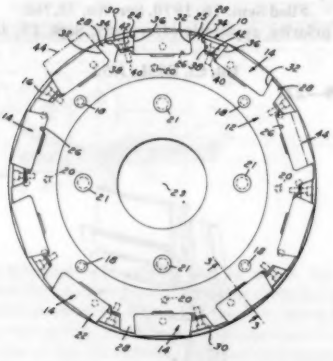


The present invention relates to a grinding device in particular for the grinding of large-surface plates such as doors, shelves and table boards, but also of curved surfaces, and its purpose is to produce a grinding device that does not make the edges of the object to be ground round and in which the grinding paper, grinding cloth or the screen-like material can be replaced fast and easily, and the grinding dust of which is removed by means of suction so that the grinding material and the objects to be ground are cooled.

3,754,355
SEGMENTAL GRINDING WHEEL

Loren B. Hanchett, Big Rapids, Mich., assignor to MWA Company, Owosso, Mich.

Filed June 23, 1971, Ser. No. 155,690
Int. Cl. B24b 5/00, 7/00
U.S. Cl. 51—209 R 2 Claims



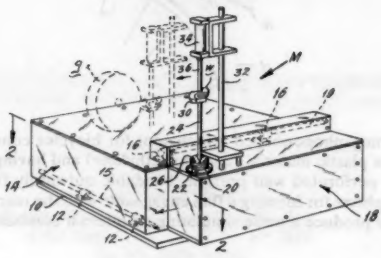
A segmental grinding wheel having a plurality of abrasive segments mounted on a one-piece chuck body. Each segment is secured to the chuck body by a removable, wedge-like clamp, and a second clamp which is an integral part of the chuck body.

3,754,356
POSITIONING MACHINE

Frank B. Hamlin, Edwardsville, Ill., and Willis L. Wells, Clayton, Mo., assignors to Hamlin Casting Corp., Edwardsville, Ill.

Filed Feb. 28, 1972, Ser. No. 229,859
Int. Cl. B24b 47/08
U.S. Cl. 51—233 18 Claims

A positioning machine has a rotatable spindle which carries objects to be positioned, and that spindle is journaled in a shiftable carriage which in turn is mounted on another shiftable carriage. The two carriages move in directions perpendicular to one another and each is shifted by a motor which may be an air cylinder or a hydraulic cylinder. Each carriage further has its own positioning turret for determining the distance it moves, and that turret is provided with a plurality of positioning rods. As the turret rotates, its positioning rods individually pass through a control position, and the rod in the control position at any given time forms a blockage between the carriage and the supporting structure for that carriage, so as to control the distance the carriage moves. The spindle is

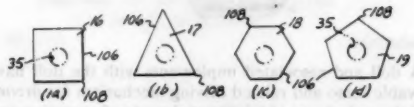


also operated by a motor which likewise may be an air or a hydraulic cylinder, and geared to the spindle is a rack, the movement of which is determined by still another turret. That turret has rods, the control position for which is in alignment with the end of the rack, so that the rod in the control position at any given time forms a blockage between the end of the rack and the carriage which supports the spindle, thus controlling movement of the rack and the angular position of the object. The three turrets are mechanically connected so that they rotate in unison and are indexed by a single indexing mechanism.

3,754,357
METHOD FOR PERFORMING SUCCESSIVE GRINDING OPERATIONS ON A WORKPIECE

Oscar Schnellmann, Zurich, Switzerland, and Henry Willy Stier, Dearborn Heights, Mich., assignors to Carmet Company, Pittsburgh, Pa.

Division of Ser. No. 751,879, Aug. 12, 1968, Pat. No. 3,587,192. This application Apr. 28, 1971, Ser. No. 138,222
Int. Cl. B24b 1/00, 21/16
U.S. Cl. 51—323 5 Claims



A method of performing successive grinding operations on a given workpiece by automatic profile grinding machine with indexing mechanism especially for contour grinding of relatively small parts such as tool inserts, comprised of a grinding wheel, work stations arranged around said grinding wheel, universal work feeding mechanism associated with each work station, individual cam mechanisms for each work station to index the grinding steps, electric and fluid pressure control mechanisms to control operation of the machine, work measuring mechanism and adjusting mechanism associated with the measuring mechanism to compensate for wear or out of balance condition of the grinding wheel.

3,754,358

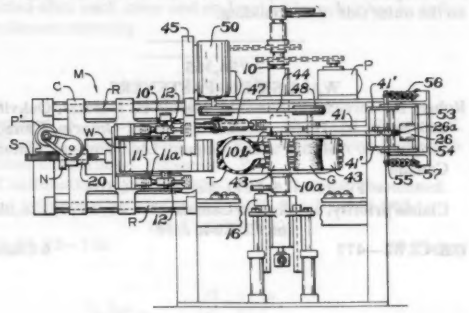
METHOD FOR CORRECTING NON-UNIFORMITY IN A ROTATING TIRE

Harmon G. Shively, Tallmadge, and Clifford A. Landsness, Akron, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 849,340, Aug. 12, 1969, Pat. No. 3,681,877. This application June 15, 1971, Ser. No. 153,241

Int. Cl. B24b *1/00*

U.S. Cl. 51—324 6 Claims



The method for reducing the radial force variation of a rotating tire by grinding from the tread a portion thereof as determined by the radial motion of a floating load wheel which provides an electrical signal proportional to the movement of the load wheel axis. The electrical signal is employed in a circuit such that when a reference voltage is exceeded, the signal is effective to move a grinder to and away from contact with the tire tread in increments of constant radial depth but of varying time duration. A pulse is synchronized with the tire rotation so each pulse indicates a unit angle of tire rotation. A comparator conducts the pulses only when the signal exceeds a predetermined value such that the pulses activate alternately a pair of one-shot multivibrators which energize actuating solenoids for applying or retracting the grinder. The solenoids move a bell crank which causes a snap-action toggle to advance or retract the grinder with respect to the tire tread.

3,754,359

ABRASION TOOLS

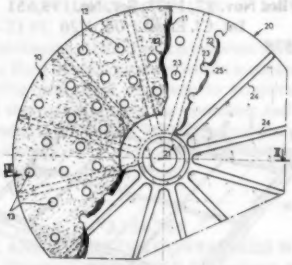
Lazare Scandaletos, Paris, France, assignor to S.P.A.M. D'Avray, France

Filed Sept. 14, 1971, Ser. No. 180,326

Claims priority, application France, Sept. 16, 1970, 7033603; June 11, 1971, 7121348

Int. Cl. B24b *55/02*

U.S. Cl. 51—356 9 Claims



An abrasion tool consists in the combination of a perforated flexible disk covered with an abrasive/adhesive complex and of a generally annular support plate provided with a central hub portion and with a plurality of radially extending channels communicating with the perforations of the disk, whereby centrifugal action causes air to flow and cool the work and the tool, and to remove the dust produced by abrasion.

3,754,360

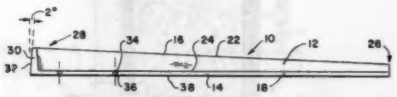
SURVEYOR'S STAKE

Robert W. Herr, 2136 Garden Park Dr., Fort Wayne, Ind.

Filed Dec. 27, 1971, Ser. No. 212,241

Int. Cl. G01c *15/00*

U.S. Cl. 52—103 6 Claims



A surveyor's stake which comprises an elongated, molded plastic member including a plurality of gradually, convergently tapered ribs whereby the member has a relatively narrow point end and wider head end. The point end is truncated in a plane perpendicular to the longitudinal dimension of the stake and the head end is provided with a driving flange.

3,754,361

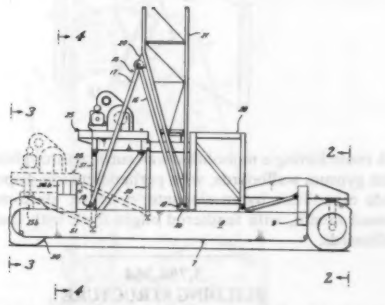
TRANSPORTABLE DRILLING MAST SUBSTRUCTURE WITH ELEVATABLE DRAWWORKS

Donald R. Branham, and Paul E. Borg, both of Houston, Tex., assignors to Pyramid Derrick & Equipment, Houston, Tex.

Filed June 26, 1972, Ser. No. 266,329

Int. Cl. E04h *12/34*

U.S. Cl. 52—115 2 Claims



A transportable support structure for a drilling mast and drawworks includes spaced longitudinally extending members with lateral brace members extending therebetween to provide a support structure for a gin pole support and a drilling mast as well as an elevatable drawworks support structure which is pivotally secured to the transportable support structure. Support means are provided for supporting the elevatable drawworks support in an intermediate position between retracted position on the support structure and elevated position to enable the support structure, drilling mast and drawworks to be moved from one location to another.

3,754,362

VERTICAL DRAINAGE SYSTEM

Berthold H. Daimler, Remscheid-Lennep; Wilhelm Herveling, Wuppertal-Elberfeld; Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 20, 1971, Ser. No. 190,742

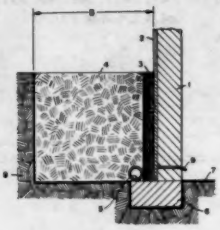
Claims priority, application Germany, Oct. 29, 1970, G 70 39 906.3

Int. Cl. E02d *27/48*

U.S. Cl. 52—169 10 Claims

A vertical drainage system for a basement or other below grade foundation wall having a sealer coat on its outer surface,

a filamentary web or sheet composed of a fiber-forming synthetic thermoplastic polymer, preferably in the form of rows of looped amorphous melt-spun and bonded filaments,



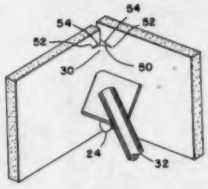
being laid along the wall between its outer sealer coat and the adjacent earth, and pipe means or the like near the bottom or footing of the wall to drain off water percolating downwardly through the filamentary filter layer.

3,754,363

ELASTOMERIC MONOLITHIC DRYWALL CORNER

Joseph W. Schneiler, Williamsville, and Richard E. Smith, Tonawanda, both of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,733
Int. Cl. E04b 2/10
U.S. Cl. 52—287 **3 Claims**



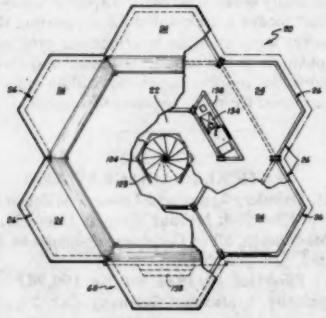
A room having a monolithic wall surface throughout formed from gypsum wallboards, with perpendicularly disposed walls made monolithic by an elongate, concave, elastomeric bead formed in situ, with feathered edges flush with the adjacent wallboards.

3,754,364

BUILDING STRUCTURE

Lory F. Ice, San Jose, Calif., assignor to Inter-Concept Enterprises Inc., Santa Clara, Calif.

Filed Nov. 4, 1971, Ser. No. 195,660
Int. Cl. E04b 1/34; E02d 27/12
U.S. Cl. 52—187 **25 Claims**



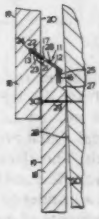
A building structure having a general honeycomb-like configuration comprised of a hexagonal foundation enclosing a central area with semi-hexagonal portions of the building cantilevered outwardly from some or all of the foundation sides. Vertical columns located at the corners of the hexagonal foundation are connected to horizontal beams that support stressed skin second floor sections and/or roof sections. The cantilevered building portions have sidewalls formed from prefabricated panels that are sealed against the vertical columns along their edges. For an embodiment adaptable as a single family two-storey home, a circular staircase is provided within the central area of the main floor while a modified version adaptable as a two apartment structure utilizes a staircase on the outer side of the building.

3,754,365

WALL SIDING FASTENERS

Robert B. Carrick, Willowdale; Harold K. Dormer, Oakville, and Bruce M. Hudd, Mississauga, all of Ontario, Canada, assignors to Abitibi Paper Company Ltd., Toronto, Ontario, Canada

Filed Nov. 5, 1971, Ser. No. 196,108
Claims priority, application Canada, Oct. 26, 1971, 126,083
Int. Cl. E04c 1/34
U.S. Cl. 52—471 **6 Claims**



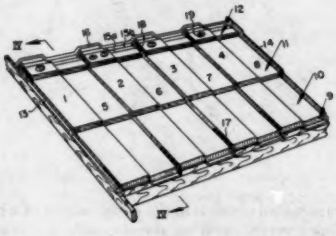
For a wall siding installation, each panel is provided with a fastener having a rigid, strip-like main body extending from a recess in the rear face of the panel near the bottom thereof. The rear portion of the body in the recess has a flexible rib extending along one face of the body and engaging the adjacent wall of the recess, the opposite face of the body engaging the opposite wall of the recess, such that the fastener is frictionally retained in the recess. If desired, the fastener may be additionally retained in the recess by a suitable adhesive. Two or more spaced, parallel flexible ribs may be provided.

3,754,366

STEPPED ROOFING SHEETS

John G. Jansson, P. O. Box 3286, 730 30 Kolsva, and Ake E. Sjoblom, Landstormsvagen 8, 702 27 Orebro, both of Sweden

Filed Nov. 17, 1971, Ser. No. 199,651
Int. Cl. E04d 1/06, 1/26
U.S. Cl. 52—535 **11 Claims**



A building element for covering of roofs, walls and the like, comprising sheet members which are arranged for intercon-

nection in any chosen number in rows after each other in two directions perpendicular to each other for forming a continuous covering. The means for interconnection of the sheet members are provided which permit movement of adjacent sheet members in the same vertical row while maintaining the interconnection of said sheet members, said means including one or more couplings provided in the upper edge of each sheet and as completent to said couplings, corresponding couplings provided and arranged in the lower edge of the sheet members on line with the upper couplings, that the upper and lower couplings of two sheet members may be connected after each other and on level with each other to define a coherent covering.

3,754,367

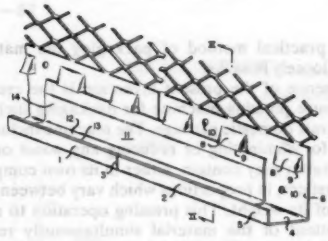
PLASTER CASING BEAD

Theodore S. O'Konski, Pittsburgh, Pa., and Richard E. Thoman, Galion, Ohio, assignors to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 95,622, Dec. 7, 1970, abandoned. This application June 12, 1972, Ser. No. 261,903

Int. Cl. E04f *13/06*

U.S. Cl. 52—726 **10 Claims**



The application discloses casing bead employed, as on metal lath, for plaster. The casing bead sections are adapted for joinder in abutting end-to-end relation. A splicing clip is utilized as a part of the assembly and interacts with end-to-end abutting sections of the casing bead to hold the same in rigid alignment.

3,754,368

STERILE PACKAGING METHOD

Francis C. Moore, and Leon R. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 112,762, Feb. 4, 1971, which is a continuation-in-part of Ser. No. 873,786, Nov. 4, 1969, Pat. No. 3,618,283. This application Nov. 5, 1971, Ser. No. 195,926

Int. Cl. B65b *55/18*

U.S. Cl. 53—21 FC **5 Claims**

A sterile packaging method which involves the steps of sealing a suitable fluid or solid product within a container capable of withstanding prolonged exposure to temperatures up to 212° F., and thereafter heating the container and its contents for an extended period, but at a temperature substantially below the boiling point of water, until the container's interior surfaces and contents are sterilized.

3,754,369

SEALING AND CHARGING CONTAINERS WITH GAS

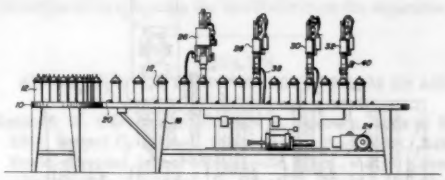
Terrance R. Copstead, Charlotte, N.C., assignor to Electronic Data Controls Corporation, Winston-Salem, N.C.

Filed Apr. 26, 1972, Ser. No. 247,842

Int. Cl. B65b *31/00*

U.S. Cl. 53—22 R **2 Claims**

Sealing and filling a metal container having a seamed body construction and an aerosol discharge valve disposed at an opening in the top of the container. The container is advanced in stepped increments along an assembly line including a plurality of stations. At the first station, the discharge valve is crimped to the container body to close the opening therein. At a second station, the discharge valve is temporarily opened



and a liquid sealant such as glycerol is sprayed into the container through the discharge valve to coat the interior surfaces of the container. At a third station, the discharge valve is again temporarily opened and the container is charged with a supply of pressurized helium.

3,754,370

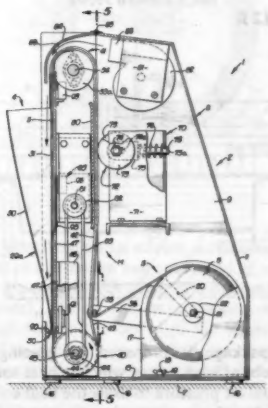
BAG DISPENSING APPARATUS AND METHOD

Neil L. Hanson, 1355 Cambridge Rd., San Marino, Calif.

Filed Mar. 24, 1972, Ser. No. 237,769

Int. Cl. B65b *43*

U.S. Cl. 53—29 **27 Claims**



Preformed bags e.g. of thin-film plastic are singly dispensed in opened condition from a rolled supply in which the bags are closed and interconnected, by an apparatus and method which passes the bag from the supply roll to a dispensing station and in the course of such passage relatively moving the opposing bag sidewalls to selectively sever one sidewall to open the bag and at the dispensing station inflating the bag for convenience in loading, easy grasping and removal.

3,754,371

METHOD AND APPARATUS FOR CLOSING THE MOUTHS OF FLEXIBLE CONTAINERS BY TWISTING

Robert J. Walker, III, 92 River Dr., Jupiter, Fla.

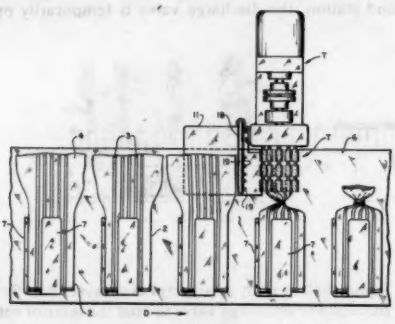
Filed May 26, 1972, Ser. No. 257,422

Int. Cl. B65b *7/00, 7/12, 51/00*

U.S. Cl. 53—38 **15 Claims**

Flat mouths of containers of flexible material with contents in the body of the containers, are moved in one general direction between a mandrel rotatable about an axis and

movable means for pressing the mouths against the mandrel, to shape the mouths on the mandrel, and then twist the mouth



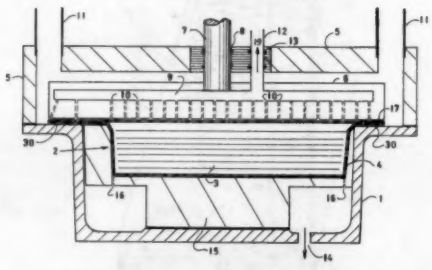
walls adjacent an end of the mandrel. Further movement of a container in such direction results in pulling of a twisted mouth from the mandrel.

3,754,372

APPARATUS FOR MAKING THERMOPLASTIC VACUUM PACKAGES

Richard R. Perdue, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 9,580, Feb. 9, 1970. This application Oct. 26, 1971, Ser. No. 192,583
Int. Cl. B65b *31/02*
U.S. Cl. 53—112 R **5 Claims**



A vacuum package is prepared by placing a product between two webs at least one of which is heat softenable, applying differential air pressure to draw the heat softenable web against a heated surface, evacuating the space between the webs, and then releasing the web and using air or gas pressure to drive the softened web onto the product and at the same time contact the other web around the periphery of the product, thus enabling the two webs to be sealed together. A heated platen having vacuum ports therein is used to apply suction and heat to the softenable web. In the resulting package the heated web conforms closely to the shape of the product it contacts.

3,754,373

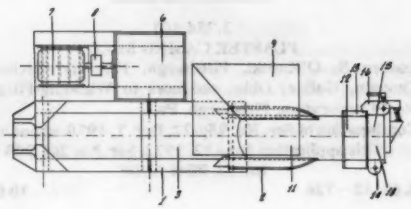
COMPRESSING AND PACKAGING MACHINE FOR SOFT AND SEMI-SOFT MATERIALS

Jorge Galvez Figari, Enrique Larreta St. No. 12, Madrid, Spain

Filed Nov. 4, 1971, Ser. No. 195,673
Claims priority, application Spain, Mar. 16, 1971, 389,277
Int. Cl. B65b *1/24*
U.S. Cl. 53—124 A **4 Claims**

The present invention refers to a machine devoted to the compression of soft and semi-soft materials such as wool, forage grass, garbage and others, and to the packaging of such materials in the compressed condition.

Products of this type are generally packaged by bailing, with or without an external cover, and secured by lines or hoops, extending around the outside of the bails. The bailed material is, therefore, generally exposed and so it must be protected from damage by weather both during transportation and storage. With regard to garbage, there is no satisfactory process presently known for packaging this material in its raw, untreated condition, and even when the material is treated to inhibit the natural fermentation, it is generally considered that



the only practical method of packaging the material is to deposit it loosely in sacks.

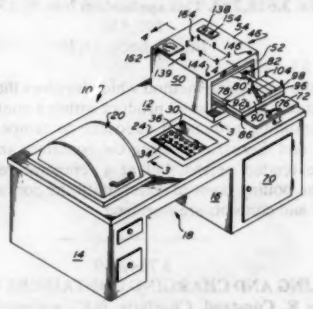
The essence of the present invention is the creation of a high pressure pressing machine for packaging such material, including raw domestic garbage. The machine includes a work chamber for eliminating or reducing any water or humidity that the matter may contain, either in its own composition or in its interstices, in proportions which vary between 15 and 40 per cent of its weight. This pressing operation to reduce the water content of the material simultaneously reduces the volume of the material treated by as much as seven of eight parts of the original volume.

3,754,374

SINGLE DOSAGE PACKAGING APPARATUS

Russell R. Haines, Cherry Hill, N.J., assignor to Paco Packaging Inc., Pennsauken, N.J.

Filed Feb. 8, 1971, Ser. No. 113,404
Int. Cl. B65b *7/28, 51/14, 67/02*
U.S. Cl. 53—373 **11 Claims**



Apparatus is disclosed for custom blister-packaging a plurality of single dosages of pharmaceuticals with each dosage appropriately identified as to the user. The apparatus is for use by hospitals, nursing homes, large pharmaceutical dispensers and the like.

3,754,375

ANISOTROPIC ORGANOSILICON POLYMER MEMBRANE

Jean Bouchilloux, Bron; Albert Fabre, Lyon 3e, and Alphonse Faure, Bron, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Mar. 2, 1971, Ser. No. 120,328
Claims priority, application France, Mar. 3, 1970, 707570
Int. Cl. B01d *53/22*; C08c *17/08*
U.S. Cl. 55—16 13 Claims

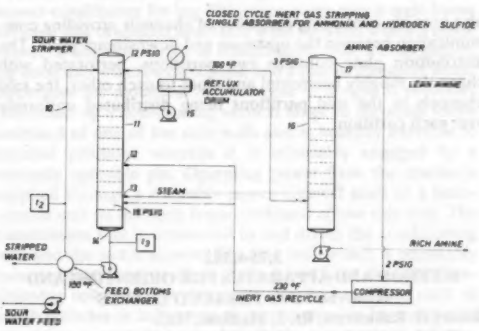
An anisotropic membrane is provided having excellent mechanical properties combined with good permeation characteristics which comprises a vinyltriorganosilane polymer or copolymer consisting of a dense layer, of average thickness between 0.01 and 10 μ, and a porous layer with open pores, of thickness up to 500 μ in which the volume of the interstitial spaces in the porous layer represents 20 to 80 percent of the total volume of the membrane.

3,754,376

INERT GAS STRIPPING OF CONTAMINATED WATER

Robert D. Kent, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 1, 1972, Ser. No. 222,480
Int. Cl. B01d *19/00*, *53/14*
U.S. Cl. 55—51 9 Claims



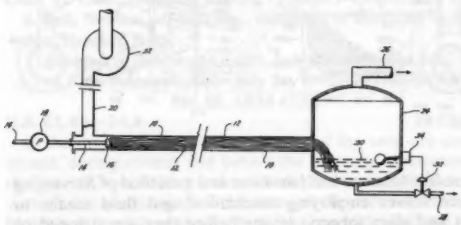
Water containing contaminating gases such as hydrogen sulfide, carbon dioxide and ammonia is freed of these contaminants by closed system stripping process which employs an inert gas and steam.

3,754,377

GAS-LIQUID MASS TRANSFER PROCESS

Kenyon E. Clonts, Houston, Tex., assignor to Merichem Company, Houston, Tex.

Continuation-in-part of Ser. No. 161,207, July 9, 1971, abandoned. This application Nov. 17, 1972, Ser. No. 307,470
Int. Cl. B01d *53/16*
U.S. Cl. 55—73 5 Claims



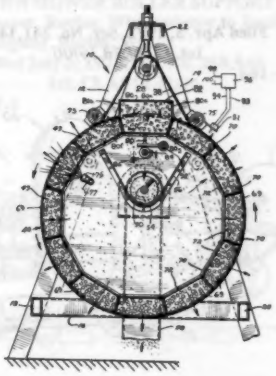
A component of at least one of two fluids is transferred into the other by introducing a liquid onto the surface of fibers extending generally linearly along a conduit with the fibers filling the cross-sectional area of at least a portion of the length of the conduit and being wetted by the liquid, flowing a gas through the conduit past the fibers thereby dragging a film of the liquid along the fibers, collecting the liquid in a gravity separator approximate the downstream end of the fibers and then separately removing the two fluids from the separator.

3,754,378

APPARATUS FOR REMOVING DUST FROM AN AIR STREAM

Kenneth M. Christensen; Howard E. Bauman, both of Hopkins; Robert G. Walker, Minneapolis, all of Minn.; Bob K. Davis, deceased, late of Minneapolis, Minn., and D. Kenneth, administrator Lindgren, Jr., Hopkins, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 764,043, Sept. 27, 1968, abandoned.
This application Sept. 8, 1971, Ser. No. 178,808
Int. Cl. B01d *46/36*
U.S. Cl. 55—91 11 Claims



To remove dust from an air stream, a filter has been devised which consists of a filtration bed composed of a multiplicity of granules that are coated with a thin film of dust-trapping liquid (normally water). The air stream containing dust particles is forced through the wetted bed until the liquid film is nearly evaporated. The granules in the bed are then subjected to violent agitation to shake the accumulated dust from their surfaces into an auger conveyor which removes the dust to a collecting bin. The apparatus consists of a plurality of adjacent chambers mounted on the periphery of a large drum that rotates past the wetting section, a filtration section and finally an agitation section in which hammers strike successive chambers to agitate and thereby remove collected contaminants.

3,754,379

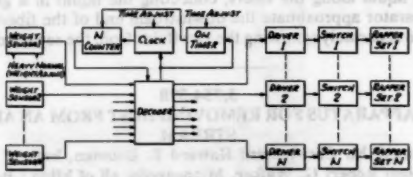
APPARATUS FOR ELECTRODE RAPPER CONTROL

Richard J. Bridges, and Paul D. Harper, both of c/o Koppers Company Inc., Koppers Building, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,545
Int. Cl. B03c *3/76*
U.S. Cl. 55—104 8 Claims

A rapper control senses the particle load collected on selected electrostatic precipitator electrodes and automatically energizes corresponding rappers connected to the selected electrodes when the collected particle load magnitude on the electrodes exceeds a predetermined limit and de-energizes the rappers when the collected particle load magnitude obtains a predetermined minimum to optimize the amount of precipitant on the collecting electrodes. The con-

trol is preferably electronic and is normally used in conjunction with a plurality of sets of rappers which are independently and sequentially energized. The load distribution of the parti-



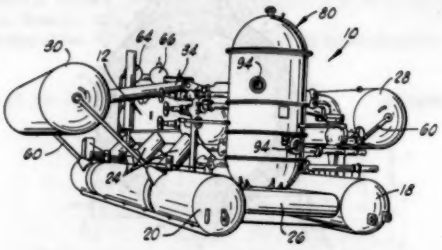
cles collected on the precipitator electrodes is monitored and the rapper sets are selectively energized in a sequence governed by the pattern of the particle load distribution.

3,754,380

SUBMARINE OIL WELL PRODUCTION APPARATUS

Robert E. McMinn; Paul M. Tournoux, both of Oklahoma City, Okla., and Donald S. Milnes, Chessington, England, assignors to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed Apr. 5, 1972, Ser. No. 241,143
Int. Cl. B01d *19/00*
U.S. Cl. 55—164 **16 Claims**



The present invention relates to a submergible apparatus for producing an oil or gas well beneath the surface of a body of water which comprises an oil and gas separator having a pair of elongated horizontal ballast tanks attached thereto and means for selectively filling the ballast tanks with water or air. A pair of movable buoyancy vessels are attached to the separator and means for selectively moving the buoyancy vessels to alternate positions with respect to the separator are provided so that the apparatus has maximum stability while being towed on the surface of the body of water or submerged therein. A closed instrument capsule is removably attached to the separator which includes a liquid level controller for maintaining the liquid level within the separator at a desired level and means are provided for adjusting the liquid level controller from the outside of the instrument capsule.

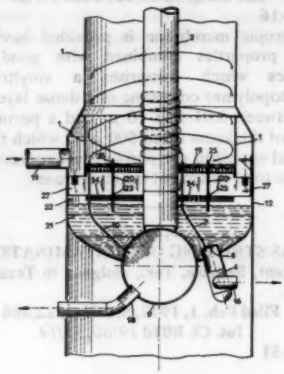
3,754,381

DIPHASIC FLUID DISTRIBUTING DEVICE

Pierre Cappiello, and Joseph Gauberthier, both of Paris, France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris and Technip Compagnie Francaise D'Etudes et de Constructions, Rueil-Malmaison, France

Filed July 28, 1970, Ser. No. 58,776
Claims priority, application France, July 9, 1970, 7023898
Int. Cl. B01d *53/00*
U.S. Cl. 55—269 **14 Claims**

A device for distributing a diphasic fluid consisting of a gas and a liquid, placed in an enclosed space elongated in a roughly vertical direction, consisting of a roughly horizontal plate dividing the said enclosed space into an upstream part and a downstream part, the said upstream part incorporating a separator, in which the said plate contains a number of pipes, one portion of which opens into the upstream part and the other portion of which opens into the downstream part, and



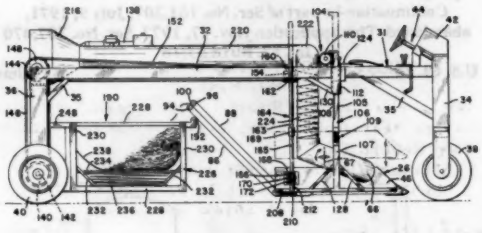
also possibly containing a number of channels providing communication between the upstream and downstream parts. The distribution plate contains two partitions, perforated with channels, roughly horizontal and close to each other, the said channels in the said partitions being distributed uniformly over each partition.

3,754,382

METHOD AND APPARATUS FOR ORIENTING AND HARVESTING TOBACCO LEAVES

Robert H. Rakestraw, Rt. 3, Madison, N.C.

Continuation-in-part of Ser. No. 871,576, Nov. 5, 1969, abandoned, which is a continuation of Ser. No. 602,823, Dec. 19, 1966, abandoned, and a continuation-in-part of Ser. No. 845,647, July 9, 1969, abandoned, which is a continuation of Ser. No. 678,396, Oct. 26, 1967, abandoned. This application Feb. 18, 1970, Ser. No. 12,291
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 **13 Claims**

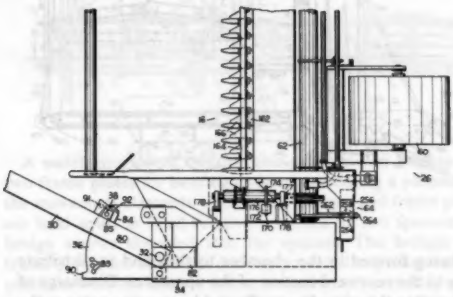


A mobile tobacco leaf harvester and a method of harvesting tobacco leaves employing mechanical and fluid means to orient and align tobacco leaves before they are stripped or severed from around the full circumference of the plant stalks and for displacing the harvested leaves in a generally uniform manner to collection receptacles.

3,754,383
WHEEL SUSPENSION MEANS FOR AGRICULTURAL MACHINE

Donald E. Burrough, and Benjamin A. Braunberger, both of West Bend, Wis., assignors to Gehl Company, West Bend, Wis.

Filed Feb. 25, 1972, Ser. No. 229,465
Int. Cl. A01d 45/02
U.S. Cl. 56—14.4 18 Claims



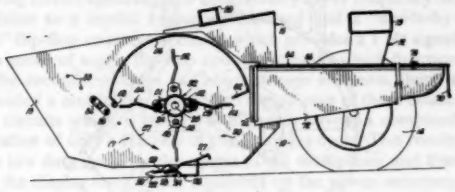
A tractor drawn and powered agricultural machine, such as mower-conditioner for hay-like crops, comprises a main frame having a pair of spaced apart side walls between which a sickle mower, a tine reel, a pair of conditioning rolls, a crop gathering hood and windrowing means, and a pair of transport wheel assemblies are mounted. A hitch pole or tongue is pivotably connected by a non-binding vertical hinge to the main frame outboard of one of the side walls and is laterally movable to selected positions wherein it is releasably engaged by a remotely operable pin. Operating power from the tractor is supplied through a rotatable power take-off shaft to a transmission unit on the main frame outboard of one side wall. The transmission unit is connected to and drives the conditioning rolls and the sickle mower. The tine reel, which is adjustably mounted on the side walls, is chain driven from the upper conditioning roll. The two transport wheel assemblies, each of which includes an independently sprung torsion-bar supported wheel, are mounted on a rockshaft which is rotatably adjustable by means of a remotely controlled hydraulic actuator to change the height of the main frame above ground. Adjustable skid shoes beneath the main frame determine the minimum height of the main frame above ground. The rockshaft is adjustably movable laterally to change the angle between its axis and the sickle-bar mower to account for differences in drag offered by various crops and ground conditions. A float lock system is provided to assist the torsion bars (i.e., suspension springs) when the hydraulic actuator is extended to raise the implement to transport height.

3,754,384
MOWING, CONDITIONING AND WINDROWING MACHINE

Cecil L. Case, Newton; Robert L. Elder, Yukon, and Ferol S. Fell, Newton, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 161,688, July 12, 1971, Pat. No. 3,716,972. This application July 26, 1972, Ser. No. 275,412
Int. Cl. A01d 45/02
U.S. Cl. 56—14.4 10 Claims

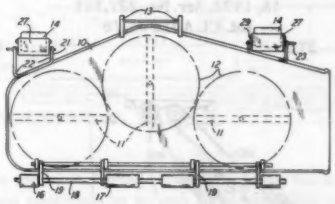
In the drying of hay, the stems only of the crop are conditioned, during cutting and before the cut crop is returned to the ground, by a flailing action which produces multiple transverse fractures along all of the stems as they are continuously blown and forcibly projected butt first in a wide, uniform, thin stream into a windrowing assembly. A single rotor with stem-fracturing hammers or blades not only conditions the stems while they are in movement, with sufficient severity to assure complete moisture release in accordance with stem coarseness and density of growth, all without undue loss of stem stiffness, leaf knock off or clipping, but also performs the function of creating air currents that provide the additional forces needed to properly propel the cut crop and produce a loose, fluffy, faster curing windrow.



3,754,385
LAWN MOWER ROLLER SUPPORT

Knud H. Hoffmeyer, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed July 3, 1972, Ser. No. 268,544
Int. Cl. A01d 35/26
U.S. Cl. 56—17.2 7 Claims



A lawn mower roller support with a support member affixed to a mower for supporting a roller which is on an adjustable piece. The support member and the adjustable piece have a rod extending therethrough in aligned openings in the support member and the adjustable piece, for altering the elevation of the roller. The rod has a head which includes a portion projectable into the support member for retaining the adjustable piece relative to the support member. A spring is on the rod and yieldingly urges the rod into the openings in the support member and the adjustable piece.

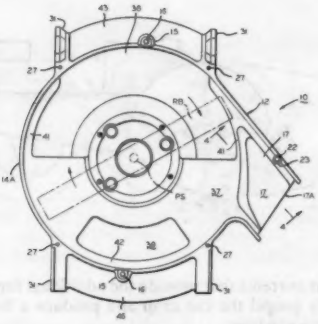
3,754,386
ROTARY MOWER

William H. Armstrong, Bloomfield Hills, Mich., assignor to Montgomery Ward & Co., Incorporated, Chicago, Ill.

Filed Mar. 1, 1972, Ser. No. 230,611
Int. Cl. A01d 55/18
U.S. Cl. 56—17.4 3 Claims

A rotary mower has a rotating cutter blade housing with a discharge opening therefrom. The housing comprises upper and lower housing members secured in confronting relationship with the cutter blade therebetween. The lower housing member has a web in spaced relationship to the terrain and to the plane of rotation of the blade, and the web has sector-shaped openings therein swept by the blade in its cutting movement, the blade being thereby protected throughout a major part of its rotation. The lower housing member also affords protection for the user in that it extends in forward and rearward directions between the front and rear ground engag-

ing wheels secured thereto. The web of the lower housing member at the discharge has a ramp thereon for deflecting



hard objects in an upward direction toward the upper housing member where it is deflected downward at the discharge opening.

3,754,387

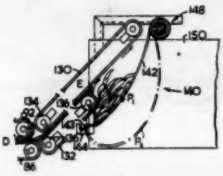
TOBACCO HARVESTER

Leonard A. Chapman, London, Ontario, Canada, assignor to Eagle Machine Company Limited, London, Ontario, Canada

Division of Ser. No. 52,345, July 6, 1970. This application Feb. 18, 1972, Ser. No. 227,511

Int. Cl. A01d *45/16*

U.S. Cl. 56—27.5 **6 Claims**



Improved apparatus for harvesting growing tobacco leaves from a standing tobacco crop is described. The harvester includes means for orienting the tobacco leaves and maintaining such orientation during and after defoliation until deposition of the leaves in container means provided on the harvester. Improved leaf defoliator elements are provided and devices for separating leaves in the picking swath from those above the picking swath are provided. The harvester is designed such as to reduce leaf damage to a minimum. The harvester also includes improved means for effecting directional control thereof relative to the tobacco plants to still further reduce damage to the tobacco leaves.

3,754,388

HAY STACK FORMING APPARATUS

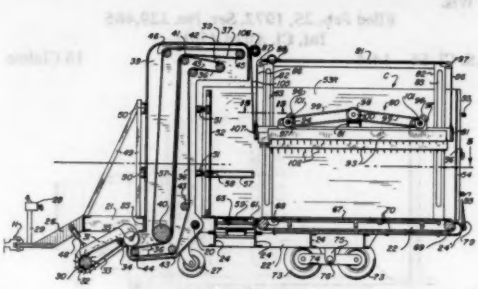
Allan B. Neely, Jr., 14889 E. 25th, Aurora, Colo.

Filed Sept. 13, 1972, Ser. No. 288,564

Int. Cl. A01d *43/02*

U.S. Cl. 56—346 **10 Claims**

An apparatus to pick up loose hay in a field and to form the same into a compacted hay stack. Thereafter, the hay stack may be discharged from the apparatus. The apparatus, which may be upon a trailer, is provided with pickup and lifting components affixed to a forward section thereof. A walled, stack chamber is formed upon a rear section of the trailer so that loose hay picked up and lifted by the aforementioned components of the forward section will drop into the chamber. Conveyors form the floor of this chamber to move the hay out of the chamber and a float having reciprocating shifting bars in a horizontally disposed arrangement will ride upon the hay



stack being formed in the chamber to shift and to distribute the hay to the rearward section of the apparatus. Discharge of a stack within this chamber is effected by opening gates at the rear end thereof.

3,754,389

YARN GUIDING MECHANISM IN A TWO-FOR-ONE YARN TWISTER

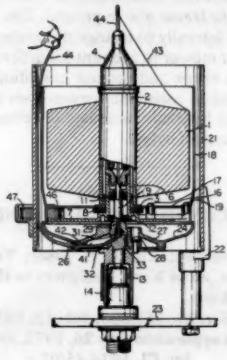
Teiji Nakahara, and Hideo Yanobu, both of Kyoto, Japan, assignors to Murata Machinery, Ltd., Kyoto, Japan

Division of Ser. No. 831,054, June 6, 1969, Pat. No. 3,636,698. This application Jan. 25, 1971, Ser. No. 109,698

Claims priority, application Japan, June 8, 1968, 43/39557

Int. Cl. D01h *1/10, 7/86*

U.S. Cl. 57—58.83 **5 Claims**

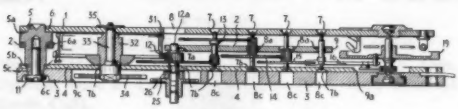


In a two-for-one yarn twister, a specially shaped yarn guide path is formed radially extending from a central longitudinal aperture of a spindle to a peripheral yarn guide of a storage disc. Further, a successive yarn guide path from the peripheral yarn guide towards an upper yarn guide member is given as a clearance between an inside and outside balloon limiting mantle.

3,754,390
WATCH MOVEMENT CONSTRUCTION

Katsutoshi Maeda, Ichikawa-shi, and Norio Kobayashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,752
Claims priority, application Japan, May 27, 1971, 46/36458
Int. Cl. G04b *13/00, 33/00*
U.S. Cl. 58—7 4 Claims

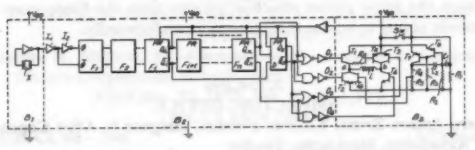


A watch movement construction wherein two bridges and two frame plates for bearing or accommodating a plurality of the movement elements wherein the bridges and frame plates are held apart in fixed relative positions by two spacers and bridge screws threaded into the spacers. The bridges and frame plates are made flat and are provided at predetermined positions with cut-outs or mount holes for easy assembly of the construction and for receiving the staffs of rotary members of the construction. The cut-outs and mount holes can be formed by simple pressing or drilling operations.

3,754,391
DRIVING ARRANGEMENT FOR QUARTZ VIBRATOR TIMEPIECES

Kinji Fujita, Suwa-gun, Nagano-ku, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,502
Claims priority, application Japan, Dec. 26, 1970, 45/118908
Int. Cl. G04b *27/00*
U.S. Cl. 58—23 R 3 Claims



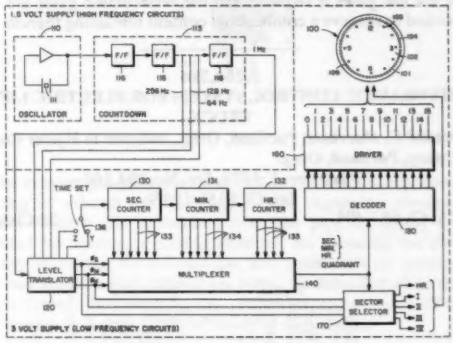
A timepiece having a high frequency time keeping oscillator including a quartz vibrator coupled through ripple binary dividers and waveform shaping circuits to a motor driving circuit. A pulse motor is operatively coupled to said motor driver circuit which also includes a sub-circuit having a monostable multivibrator. The ripple binary dividers and waveform shaping circuits are preset by a make-switch so as to produce motor driver signals for application to said motor driver circuit immediately after the make-switch is opened, while pulses are applied by said sub-circuit to said pulse motor during such resetting.

3,754,392
APPARATUS FOR DRIVING A LIGHT EMITTING DIODE OF HOROLOGIC DISPLAY

R. Gary Daniels, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 17, 1971, Ser. No. 143,826
Int. Cl. G04b *19/30, 19/06*
U.S. Cl. 58—50 R 19 Claims

There is disclosed a logic and driving circuit for a light emitting diode type horologic display in which three diodes are read out at any given time to represent the time of day. Power consumption is kept to a minimum by the use of a two voltage level system with the lower voltage supplying those portions of the circuit working at a high frequency while the higher voltage supplies the display and those portions of the driving circuit operating at a considerably lower frequency. In addition to a crystal frequency standard and a "divide-by-two" flip-flop countdown circuit which provides a 1 Hz signal to a series of toggle flip-flop counting circuits which function as the seconds, minutes and hours storage elements, there is provided a multiplexer coupled to the outputs of these counting circuits which is strobed with pulses having a combined duration of only a fraction of the sampling cycle. This results in a low duty cycle for the output of the multiplexer and thus for the display itself which conserves on the power necessary to drive the display. Since hour, minute and second information is sequentially sampled by the multiplexing circuit, multiplexing eliminates decoder and driver redundancy. Provision



is made in the multiplexing logic for dividing the horological display into quadrants or sectors so as to further reduce the number of driver and decoder elements. As a result there is also provided a quadrant selecting circuit. The sampling pulses for the multiplexing circuit are conveniently derived from the frequency standard countdown circuit. The driving system utilizes complementary metal oxide semiconductor (CMOS) components in which power drain is minimized because these elements draw appreciable power only when switching. A further power consumption advantage is obtained by utilizing NAND gate logic to permit the use of these low power CMOS components. Toggle flip-flops are chosen for the counters because they are available in metal oxide semiconductor form and because the total number of transistors utilized is reduced. The logic described herein is used with a horologic display in which the minutes and seconds are displayed in the single ring of elements with the hours being displayed in another single ring of elements.

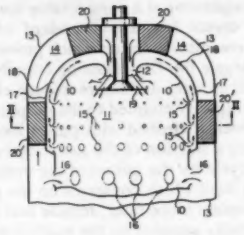
3,754,393
GAS TURBINE ENGINE COMBUSTOR

Noritoshi Handa, Yokohama City, Japan, assignor to Nissan Motor Company Limited, Yokohama City, Japan

Filed Oct. 1, 1971, Ser. No. 185,577
Claims priority, application Japan, Dec. 5, 1970, 45/107276
Int. Cl. F02c *7/08*
U.S. Cl. 60—39.52 3 Claims

A gas turbine engine has a combustor having a combustion chamber and an air passage substantially surrounding the combustion chamber and leading from a compressor of the gas turbine engine. The air passage communicates with the combustion chamber through primary and secondary air inlets. A hot gas recirculating passage is formed between the combustion chamber and the air passage, providing communi-

cation between the combustion chamber and the primary air inlet. A limited portion of the hot gases produced in the combustion chamber is recirculated to the air inlet through the



recirculating passage so as to be cooled by air circulated through the air passage, whereby the maximum temperature of the hot gases is reduced and the recirculated gases are reburned to remove a combustible content remaining therein.

3,754,394

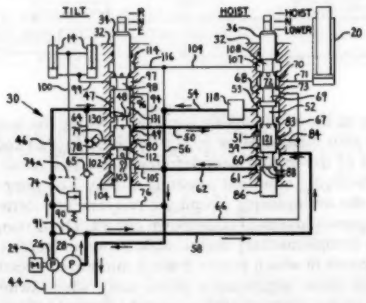
HYDRAULIC CONTROL SYSTEM FOR ELECTRIC LIFT TRUCK

Donald C. Morrison, Portland, Oreg., assignor to Hyster Company, Portland, Oreg.

Filed Dec. 2, 1971, Ser. No. 204,106

Int. Cl. F15b *13/09*

U.S. Cl. 60—484 **22 Claims**



A hydraulic control system for a batter-powered electric lift truck includes hydraulically powered mast-tilting cylinders and fork hoist cylinders supplied with pressure fluid from an electric motor-driven small and large capacity pair of pumps. The hydraulic circuit supplying pressure fluid to the cylinders includes a pair of spool-type metering valves, one for the tilt cylinders and one for the hoist cylinder. The hoist spool is a three-position spool having a neutral position, a lowering position and a hoisting position range. When the spool is stroked through the hoist range from low to high, fluid is metered by the spool to the hoist cylinder first at a small flow rate and gradually at increasing rates only from the small pump until the maximum flow capacity of the small pump is reached. Thereafter, as stroking continues, flow from the large pump is added gradually and progressively to the maximum flow of the small pump until the full flow capacities of both pumps is utilized to extend the hoist cylinder. Thus through operator control of the hoist spool the hoist can be operated at either low or high speed and in small, slow increments for precise positioning. In the illustrated circuit, this progressive additive-metering of the flow from the small and large pumps occurs regardless of the position of the tilt spool. Both pumps, as well as the valve block housing the tilt and hoist spools, are enclosed within the hydraulic fluid reservoir for the system.

3,754,395

HYDRAULIC PRESSURE CONTROLLING DEVICE FOR INTENSIFYING CYLINDER

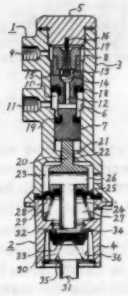
Toyoju Mochizuki, 5-10, 7-chome, Roppongi, Minataku, Toyko, and Mamoru Watanabe, 16-9, 6-chome, Takinogawa, Kitaku, Tokyo, both of Japan

Filed Nov. 10, 1971, Ser. No. 197,350

Claims priority, application Japan, Nov. 13, 1970, 45/99478

Int. Cl. F15b *7/00*; F17d

U.S. Cl. 60—575 **7 Claims**



A relay piston for driving a pneumatic pressure controlling device for a servo motor is disposed at a position where it is displaced by hydraulic pressure in a low-pressure chamber connected to a master cylinder. A high-pressure chamber is formed in communication with the low-pressure chamber through a passage in the relay piston, the high-pressure chamber being connected to an intensifying cylinder. In the passage there is provided a valve adapted to intercept communication between the high-pressure chamber and the low-pressure chamber in accordance with advancement of the relay piston. The force that is applied to the relay piston by hydraulic pressure in the high-pressure chamber, when the valve is closed, is the resultant of the force component acting to advance the relay piston which is greater than the force component acting to let the relay piston move forwardly.

3,754,396

IMPACTING DEVICE

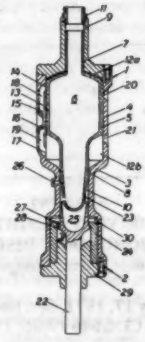
Eero Antero Erma, Klinten, Sweden, assignor to Atlas Copco Aktiebolag, Stockholm, Sweden

Filed Nov. 3, 1970, Ser. No. 86,467

Claims priority, application Sweden, Nov. 7, 1969, 15297/69

Int. Cl. F15b *7/00*; F01l *21/02*; E21b *1/00*

U.S. Cl. 60—563 **3 Claims**



The impacting device is primarily intended for rock drills and consists of a drive piston, a hammer piston and an auxilia-

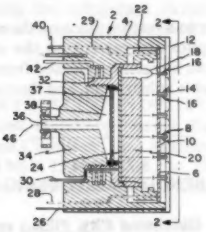
ry piston, wherein the drive piston drives the hammer piston by means of an elastic fluid cushion. The powertransmitting fluid cushion obtains a very high working pressure by being fed with elastic fluid under pressure and by being compressed by the drive piston during its working stroke. The auxiliary piston stops the hammer piston during its return stroke by absorbing the kinetic energy of the hammer piston. The hammer piston is stopped in a predetermined position corresponding to the optimum energy output before the succeeding stroke.

3,754,397

COLLOID ENGINE BEAM THRUST VECTORING

Philip W. Kidd, Palos Verdes Peninsula, and Norman E. Law, Cypress, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 23, 1970, Ser. No. 83,486
Int. Cl. H05h *5/00*
U.S. Cl. 60—202 **3 Claims**



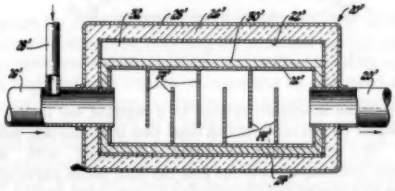
To provide thrust vectoring in a colloid beam engine, a plurality of deflector electrodes surround the colloid needles upstream of the extractor. To change the direction of the colloid beam, a bias voltage is applied to the deflector electrodes whereby to vary the thrust vector of the colloid beam.

3,754,398

THERMAL ENGINE EXHAUST REACTOR WITH OVER-TEMPERATURE PROTECTION

James N. Mattavi, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1971, Ser. No. 211,972
Int. Cl. F01n *3/00*
U.S. Cl. 60—298 **3 Claims**



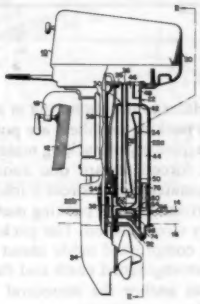
A thermal reactor preferably having in a preferred embodiment, an insulated reaction chamber in which engine exhaust gases are exothermically reacted to reduce undesirable exhaust emissions. The inner liner of the reaction chamber is protected against overheating during temporary periods of excessive temperature operation by surrounding the outer surfaces of the liner with a fusible material having a melting point between the normal operating temperature of the reactor and the maximum operating temperature. The latent heat of fusion of the fusible material acts as a heat sink, absorbing heat upon melting of the material so as to maintain the walls of the inner liner below their maximum operating temperatures during temporary periods of abnormally high temperature operation due to engine malfunction or the like.

3,754,399

EXHAUST GAS PURIFYING DEVICE FOR AN OUTBOARD PROPULSION UNIT

Shun Ono, and Tsugio Nakatani, both of Hamamatsu, Japan, assignors to Yamaha Halsudoki Kaisha, Iwata-shi, Japan

Filed Apr. 26, 1972, Ser. No. 247,533
Claims priority, application Japan, Apr. 30, 1971, 46/34569 (utility model)
Int. Cl. F02b *75/10*
U.S. Cl. 60—309 **11 Claims**



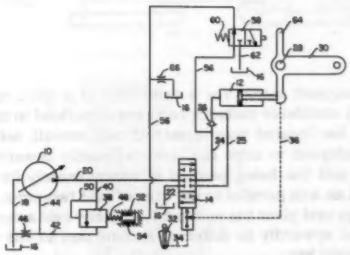
An exhaust gas purifying device of an outboard motor comprising an exhaust gas discharge pipe; a expansion chamber where exhaust gas introduced from the pipe is rapidly expanded for cooling; a cooling chamber for elevating the efficiency of cooling the exhaust gas; and a reservoir for holding the ingredients of the exhaust gas which are liquefied when the gas is cooled, thus enabling the exhaust gas to be drawn off to the outside in a state free from harmful ingredients.

3,754,400

VARIABLE PRESSURE HYDRAULIC SYSTEM

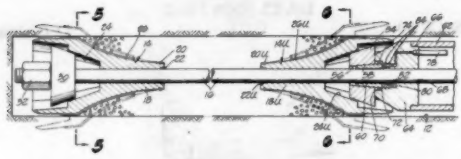
Donald James Parquet, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 20, 1972, Ser. No. 245,793
Int. Cl. F15b *15/18*
U.S. Cl. 60—445 **13 Claims**



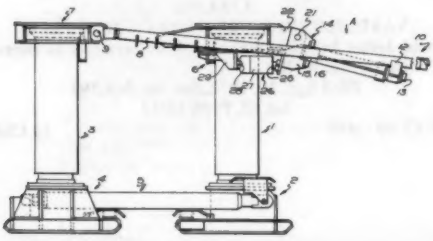
A hydraulic system in which a motor is operated by a variable displacement pump in which displacement is regulated by a control valve which is sensitive to the pressure at the hydraulic motor to maintain the pump outlet pressure higher than the motor pressure. A valve in the pilot line between the motor and control valve is responsive to a predetermined movement of the motor to block fluid communication between the motor and control valve so that when the motor reaches a predetermined position, the pressure in the system is reduced.

3,754,401
EARTH ANCHOR
Joseph H. Lipow, 5114 Venice Blvd., Inglewood, Calif.
Filed Dec. 29, 1971, Ser. No. 213,434
Int. Cl. E02d 5/74
U.S. Cl. 61—39 **14 Claims**



This invention relates to the anchoring of a tension member into the earth. Two packing members are positioned in a hole in the earth about a quantity of packing material. The packing members are then forced toward one another which compresses the packing material and forces it into the surrounding earth. The earth surrounding the packing material is also compressed and thereby strengthened. The packing members are then locked in this compressed mode about a structural tension member. The strengthened earth and the anchoring unit then act together to anchor the structural tension member securely in the earth.

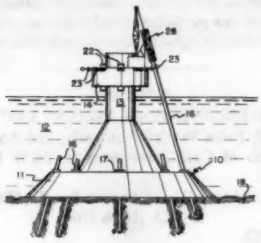
3,754,402
MINE ROOF SUPPORTS
David Beaumont Smith, Wakefield, England, assignor to Fletcher Sutcliffe Wild Limited
Filed June 23, 1971, Ser. No. 156,013
Claims priority, application Great Britain, June 26, 1970, 31,005/70
Int. Cl. E21d 15/45
U.S. Cl. 61—45 D **4 Claims**



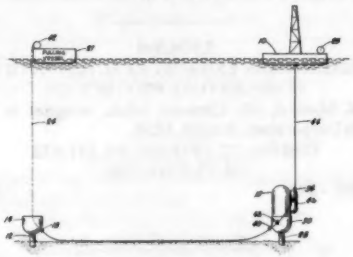
A support means for a cantilever of a mine roof support which cantilever includes two spaced parallel arms, comprising a bar located transversely of and beneath said two arms and adapted to urge said arms upwardly towards the mine roof, said bar being pivoted at approximately its mid-length about an axis parallel to the axes of said two arms, and means to urge said pivot bar upwardly, whereby said arms are able to extend upwardly to different extents due to the pivoting of said pivot bar.

3,754,403
OFFSHORE MARINE STRUCTURE EMBODYING ANCHOR PILE MEANS
George E. Mott, Metairie, and James P. Wilbourn, New Orleans, both of La., assignors to Texaco Inc., New York, N.Y.
Filed Feb. 9, 1972, Ser. No. 224,734
Int. Cl. E02b 17/00; E02d 11/00
U.S. Cl. 61—46.5 **8 Claims**

The invention relates to a buoyant marine structure as would be found, or is usable in a body of water which lies above a penetrable substratum. The structure is comprised of several operably connected components and is controllably buoyant as to be floated or propelled to a proposed working site. Thereafter, the buoyancy is regulated to sink the hull portion of the structure to a resting place on the ocean floor. A series of anchoring piles are carried on the structure in such manner that they can be readily released from a fixed position to enter the penetrable substratum, and thereafter be driven to a desired depth.



3,754,404
METHOD FOR BENDING AND LAYING PIPE UNDER WATER
Thomas S. Moore, Oklahoma City, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.
Continuation-in-part of Ser. No. 851,400, Aug. 19, 1969. This application May 24, 1971, Ser. No. 146,242
Int. Cl. F16l 1/00; E21b 43/01
U.S. Cl. 61—72.3 **9 Claims**

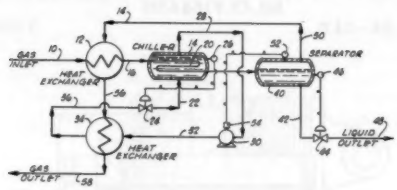


The present invention relates to a method for laying pipe under water to interconnect at least two installations, such as surface or submerged facilities associated with wells, manifolds, collection facilities and the like. More particularly, it relates to a method for bending and laying pipe under water. In one embodiment, the method utilizes a submersible chamber in which workmen may operate in a dry atmosphere.

3,754,405
METHOD OF CONTROLLING THE HYDROCARBON DEW POINT OF A GAS STREAM
Ward F. Rosen, Oklahoma City, Okla., assignor to Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Filed Feb. 10, 1969, Ser. No. 797,960
Int. Cl. F25j 3/00, 3/06
U.S. Cl. 62—21 **6 Claims**

The present invention relates to a method of controlling the hydrocarbon dew point of a gas stream in order to prevent condensation of the gas stream in subsequent gas transmission and distribution systems. The gas stream is passed in heat

exchange relationship with an expanded refrigerant stream thereby cooling the gas stream and liquifying only those condensible components in said gas stream required to obtain a desired residue gas dew point. The cooled residue gas is then



passed in heat exchange relationship with the refrigerant stream after the refrigerant stream has been compressed thereby condensing the refrigerant stream and heating the residue gas stream well above its dew point.

3,754,406

THE PRODUCTION OF OXYGEN

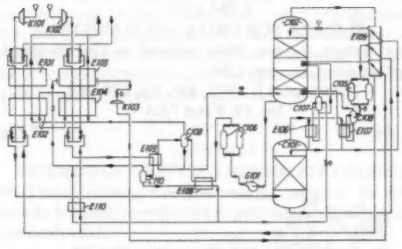
Rodney John Allam, Guildford, Surrey, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 15, 1971, Ser. No. 124,253

Claims priority, application Great Britain, Mar. 16, 1970, 12,586/70

Int. Cl. F25j *3/02, 3/04*

U.S. Cl. 62—41 **13 Claims**



A plant for the production of low purity oxygen, in which a low pressure stream of incoming air is cooled against outgoing gas streams and fed into a high pressure fractionating column, and a high pressure stream of incoming air is cooled against outgoing gas streams, partially condensed against boiling liquid oxygen product in a product vaporizer, and separated into gas and liquid streams, the liquid stream being sub-cooled and expanded into a low pressure fractionating column while a major part of the gas stream is re-heated and expanded to provide plant refrigeration. Crude liquid oxygen from the bottom of the high pressure column is cooled against waste outgoing nitrogen from the low pressure column and then admitted to the low pressure column after first being used to liquefy some of the nitrogen from the high pressure column in an external reboiler/condenser. Liquid oxygen product from the low pressure column is pumped to a higher pressure before being passed through the sub-cooler and the product vaporizer. The remainder of the high pressure column nitrogen is liquefied in a second external reboiler/condenser by the separated high pressure liquid feed on its way to the low pressure column. The liquefied high pressure column nitrogen is used as reflux for the two columns, that for the low pressure column being cooled against outgoing waste nitrogen. The expander exhaust is likewise cooled against outgoing waste nitrogen before admission to the low pressure column.

3,754,407

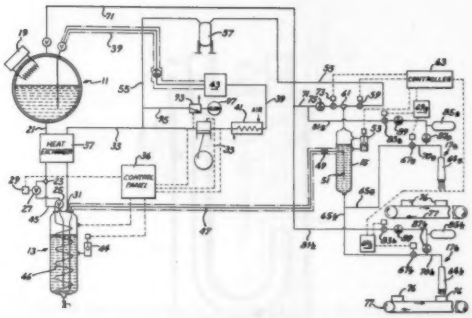
METHOD AND SYSTEM FOR COOLING MATERIAL USING CARBON DIOXIDE SNOW

Lewis Tyree, Jr., 10401 S. Oakley Ave., Chicago, Ill.

Continuation-in-part of Ser. No. 14,525, Feb. 26, 1970, Pat. No. 3,660,985. This application May 8, 1972, Ser. No. 250,885

Int. Cl. F17c *7/02*

U.S. Cl. 62—55 **13 Claims**



High pressure liquid CO_2 from a storage vessel is subcooled by flashing a portion of a liquid stream therefrom to liquid plus vapor and passing the remaining portion of the liquid stream in heat-exchange therewith. The lower pressure vapor, which is compressed and returned to the storage vessel, is used to transfer the subcooled liquid CO_2 to a holding tank which may be located at a substantial distance from and above the storage vessel. High pressure vapor from the storage vessel is employed to intermittently supply subcooled high pressure CO_2 to one or more snow-making devices, located closer to the holding tank, which apply CO_2 snow to the material being cooled. High pressure vapor is also employed to prevent snow formation in the system upstream of the snow-making devices.

3,754,408

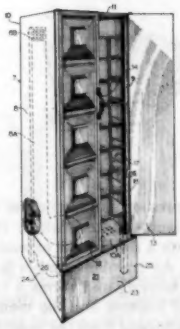
DOMESTIC WINE COOLER

Robert L. Littleton, 347 Maynard, Ann Arbor, Mich.

Filed May 8, 1972, Ser. No. 251,150

Int. Cl. F25d *23/00*

U.S. Cl. 62—302 **3 Claims**



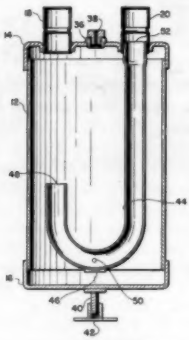
A modular, refrigerated cabinet having a removable, portable wine rack on its interior, with means to support the rack.

3,754,409

LIQUID TRAPPING SUCTION ACCUMULATOR

George T. Wreen, Jr., Crittenden; Hugh W. Mann, Portsmouth, and Elwood R. Zeek, Crittenden, all of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed Mar. 6, 1972, Ser. No. 232,110
Int. Cl. F25b 43/00
U.S. Cl. 62—503 5 Claims



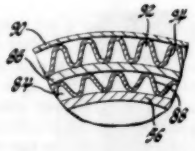
A liquid trapping suction accumulator of the type used intermediate the compressor and evaporator in a vapor-compression refrigeration system as a protective device for the compressor. The device provides for minimal pressure drop in the system while still performing the function of compressor protection, and provides for safe removal of accumulated oil and/or liquid refrigerant from the accumulator chamber.

3,754,410

COMBINATION COMPRESSOR-CONDENSER

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1972, Ser. No. 242,410
Int. Cl. F25b 39/04
U.S. Cl. 62—507 3 Claims



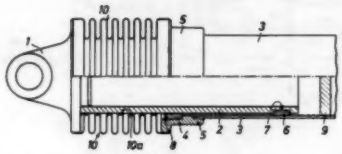
A combination compressor and condenser assembly for an automobile air conditioning system which has a cylindrical compressor housing with a drive shaft extending axially from the end of the housing. An annular member is connected at its opposite edges to the housing and forms a condenser cavity between the cylindrical housing and the member for cooling refrigerant which is discharged from the compressor through a port in the housing. An air shroud encircles the annular member to form an air passage adjacent the condenser cavity and conducts a flow of air discharged from an integral pulley-fan assembly which is connected to the compressor's drive shaft.

3,754,411

TELESCOPING DRIVE OR PROPELLER SHAFTS

Michel Orain, Conflans Saint-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Filed Feb. 28, 1972, Ser. No. 229,882
Claims priority, application France, Apr. 16, 1971, 7113640
Int. Cl. F16d 6/00
U.S. Cl. 64—11 B 9 Claims



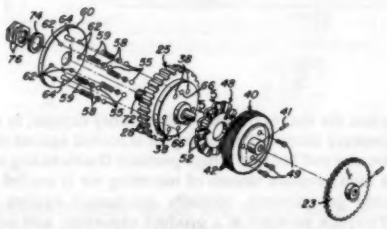
A torque transmission device for telescoping drive or propeller shafts. The device comprises a slide relatively slidably mounted within a torque transmission tube and a resilient bellows connected between the slide and a sleeve fixed to an end of the torque transmission tube such that the bellows is in sliding contact with the slide and/or the tube for its stabilization. A first slide ring is mounted on the sleeve for sliding contact with the slide. A second slide ring is also mounted on the sleeve in sliding contact with the slide or at the end of the slide in sliding contact with the interior wall of the torque transmission tube in which case the bellows is enclosed entirely within the tube between the latter and the slide.

3,754,412

SLIP CLUTCH DRIVE MECHANISM

Forrest A. Briggs, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Filed Sept. 13, 1971, Ser. No. 179,942
Int. Cl. F16d 7/06
U.S. Cl. 64—29 7 Claims



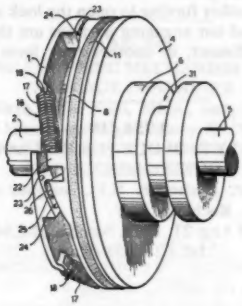
A substantially constant torque is transmitted to a braked shaft through a slip clutch including a wheel-like drive member supported for rotation by the shaft and having angularly disposed axial holes which receive corresponding balls. Compression springs are positioned within the holes to urge the balls into engagement with an annular driven member which is secured to the shaft and has angularly disposed V-shaped peripheral recesses for receiving the balls. The recesses and balls are angularly spaced and arranged so that at least one ball is seated in drive position (within a recess) at substantially any angular position of the drive member relative to the driven member to assure immediate rotative movement of the shaft when the brake is released. An axially adjustable plate rotates with the drive member and engages the springs to provide for conveniently changing the substantially constant torque transmitted to the shaft through the balls and the driven member. The clutch functions in the same manner in either direction of rotation of the drive member.

3,754,413

FRICTION CLUTCH

Bartolomeo Borrini, Ivrea, (Turin), Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

Filed June 8, 1972, Ser. No. 260,798
Int. Cl. F16d 7/02
U.S. Cl. 64—30 R 1 Claim



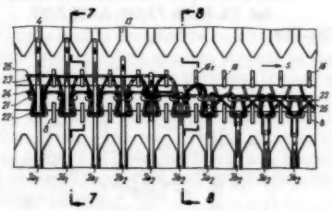
A friction clutch includes a driving disk, a driven disk and an intermediate disk which is spring-coupled to the driving disk for imparting rotation thereto. The intermediate disk has a surface of friction material for gripping the driver disk when the latter is shifted into engagement with the former. The opposite face of the intermediate disk is provided with a plurality of inclined lugs at its periphery which mate with corresponding inclined lugs on the driving disk. Upon engagement of the clutch, the spring coupling and inclined lugs serve to create an exchange of forces for making the maximum transmissible value of torque independent of variations in the coefficient of friction between the coupled surfaces.

3,754,414

METHOD OF KNITTING RUNPROOF COURSES

Pavel Uhlir, Trebic, Czechoslovakia, assignor to ELITEX, Zavody textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

Filed Oct. 29, 1969, Ser. No. 872,182
Claims priority, application Czechoslovakia, Oct. 31, 1968, 7420/68
Int. Cl. D04b 9/10, 15/06
U.S. Cl. 66—14 2 Claims



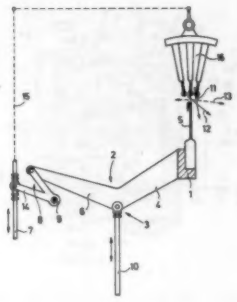
Runproof courses are formed by providing alternate needles of a circular knitting machine with doubled loops formed of independent yarns and thereafter pulling one of said yarns from said loop and crossing the pulled yarn over to an adjacent loop.

3,754,415

NEEDLE BAR DRIVE FOR WARP KNITTING MACHINE

Karl Kohl, 10 Chlorodontstrasse, Obettshausen, Germany

Filed Dec. 6, 1971, Ser. No. 204,933
Claims priority, application Germany, Dec. 7, 1970, P 20 60 101.8
Int. Cl. D04b 23/00
U.S. Cl. 66—86 2 Claims



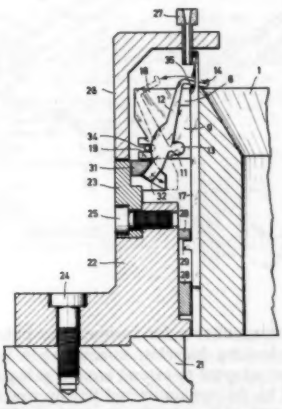
A drive for imparting to a warp knitting machine needle bar a compound motion including a vertically reciprocating component and a substantially horizontal swinging component comprises a control lever rising from a fulcrum. The needle bar is mounted on the outer end of a first control lever arm. A vertically reciprocable push-rod is linked to the control lever fulcrum and a bell-crank lever is linked to the outer end of the second control lever arm, another push-rod rocking the bell-crank lever.

3,754,416

APPARATUS FOR THE PRODUCTION OF KNIT GOODS

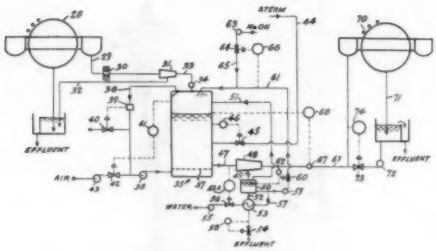
Harry Apprich, Uhlandweg 34, 7305 Altbach/Neckar, Germany

Filed July 7, 1971, Ser. No. 160,357
Int. Cl. D04b 15/06, 15/14
U.S. Cl. 66—106 20 Claims



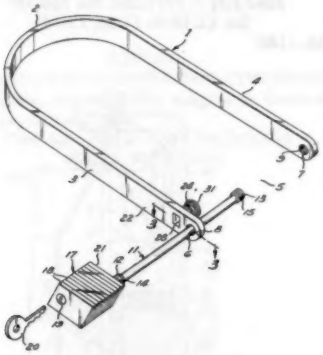
An apparatus for the production of knit goods comprising a needle guiding body having reciprocating loop forming needles and a plurality of trick parts secured thereto. A plurality of the trick parts have a step-like offset bearing plate mounted thereto, one face of which is turned away from the needle guiding body and carries at least one sinker, the opposite facing which is turned towards the needle guiding body bears at least one needle spatially separated from the sinker.

3,754,417
OXYGEN BLEACHING
Allan Geoffrey Jamieson, Husum, Sweden, assignor to Canadian Industries Limited, Montreal, Quebec, Canada
Filed Dec. 10, 1970, Ser. No. 96,949
Claims priority, application Canada, Jan. 8, 1970, 071726
Int. Cl. D21c 9/10
U.S. Cl. 68—15 **13 Claims**



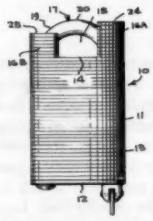
An apparatus for treating lignocellulosic material such as wood pulp with oxygen under pressure as a step in an oxygen bleaching process. The apparatus introduces the lignocellulosic material, oxygen and other reagents into the pressurized vessel continuously, and continuously withdraws the treated product and spent reagents. The apparatus permits the carrying out of a continuous oxygen bleaching process.

3,754,418
LOCK APPARATUS
Peter B. Miller, 508 Hendricks Isle, Fort Lauderdale, Fla.
Filed July 27, 1972, Ser. No. 275,799
Int. Cl. E05b 73/00
U.S. Cl. 70—18 **16 Claims**



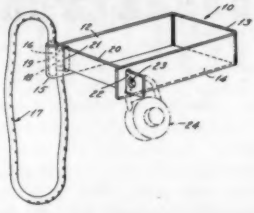
Lock apparatus suitable for various uses but particularly disclosed for locking bicycles, comprising a generally U-shaped member adapted to extend around at least one article to be secured by the apparatus and having coaxial openings near the open ends of its spaced arms. An arm of the U-shaped member slidably and non-rotatably carries a locking pin that can be manually pushed to an extended position where it projects from the inside of the arm in which it is mounted and that is spring-loaded to bias it in the opposite retracted position. A closure bar has spaced external portions adapted to engage and be firmly secured in the openings in the arms of the U-shaped member when the bar is properly located and rotated; when so positioned, the bar extends across and closes the open end of the U-shaped member and is firmly secured in the arms. The bar must be rotated to release it from the arm openings so the bar can be slid axially in the arms to open the U-shaped member. The bar carries, at an end outside of the U-shaped member, a lock case having a known internal locking mechanism adapted to be actuated to unlocking condition by a key or other unlocking means. The lock case has an opening into which the locking pin can extend and be secured by the locking mechanism to prevent rotation of the bar, when the lock casing is positioned with its opening aligned with the pin. Exposed parts are formed of metal resistant to cutting, breaking, bending, or other forcing to open the lock apparatus. The arm openings and bar engaging portions are threaded in one disclosed embodiment; in another they form bayonet type connections.

3,754,419
HIGH SECURITY PADLOCK FOR RAILROAD SWITCH LOCKING MECHANISM
James L. Taylor, Rochester, N.Y., assignor to Sargent & Greenleaf, Inc., Rochester, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,040
Int. Cl. E05b 67/02
U.S. Cl. 70—52 **10 Claims**



A high security padlock for railroad switch locking stands, including a U-shaped shackle to extend through an aperture in an eye formation of a locking lever on the stand, and a padlock body having a pair of shroud shoulder formations projecting upwardly for unequal heights in enshrouding relation to three sides of the respective shackle legs. The shoulder formations extend into recesses in portions of the stand flanking the eye, when the shackle is in the eye, with the shorter shoulder spaced far enough to the confronting surface of the stand to permit insertion of the user's finger into holding relation with the shackle.

3,754,420
ANTI-THEFT APPARATUS FOR SKIS
Werner B. Oellerich, 14170 Barbara St., Livonia, Mich.
Filed Oct. 30, 1972, Ser. No. 301,868
Int. Cl. E05b 73/00; A47f 7/00
U.S. Cl. 70—58 **3 Claims**



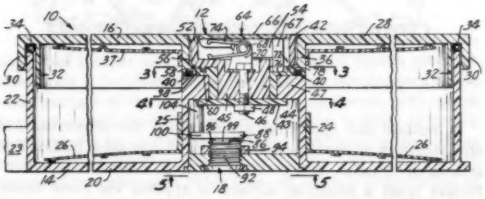
A locking means for skis and the like which includes a U-shaped member having a pair of spaced apart side walls adapted to be slidably mounted over a pair of skis placed bot-

tom to bottom between the foot bindings thereon, and a locking bar adapted to be operatively mounted between the free ends of the side walls of the U-shaped member after it is mounted around the skis to lock the U-shaped member on the skis. A flexible cable is provided for securing the locking means and skis to a ski rack or other fixed object. One end of the flexible cable is connected to the free end of one of the side walls of the U-shaped member, and the other end of the cable is attached to one end of the locking bar.

3,754,421
LOCKING COUPLING MECHANISM FOR REEL STORAGE CONTAINER

Wayne M. Wirth, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1971, Ser. No. 194,248
Int. Cl. E05b *65/52*
U.S. Cl. 70—63 **9 Claims**

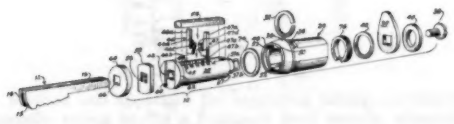


A mechanism for releasably coupling the portions of a reel storage container, including a key-operated cylinder lock for locking the mechanism in the coupled position.

3,754,422
CYLINDER LOCK AND U-SHAPED KEY AND METHOD OF FORMING SAME

Wells F. Stackhouse, Ashville, N.Y., assignor to American Locker Co., Inc., Jamestown, N.Y.

Filed June 26, 1972, Ser. No. 266,141
Int. Cl. E05c *19/02, 29/10*
U.S. Cl. 70—364 R **13 Claims**



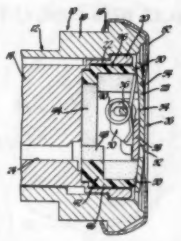
A cylinder type lock is designed to receive a U-shaped key having tumbler manipulating grooves formed in facing surfaces of its essentially parallel side portions. The key is formed by providing V-shaped slots in a key blank to bound the inwardly facing surfaces of the side portions and a connecting bridge portion, cutting the manipulating grooves in the inwardly facing surfaces of the side portions in a predetermined relationship to the slots and then folding the side portions relative to the bridge portion.

3,754,423
CYLINDER LOCK ASSEMBLY

Edward H. Seidewand, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed July 24, 1972, Ser. No. 274,218
Int. Cl. E05b *17/18*
U.S. Cl. 70—455 **4 Claims**

A cylinder lock assembly including a cylinder portion, a barrel portion rotatably disposed on the cylinder portion, a plastic cover support member disposed in a cavity at the outboard end of the barrel portion, the support member having a wall portion with a beveled edge protruding beyond the confines of the cavity, a cover disc disposed over the cavity and engaging the beveled edge of the wall portion, and a retaining

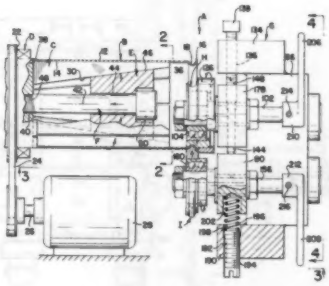


ring attached to the cylinder portion and engaging the cover disc in line contact to retain the latter on the lock assembly. The retaining ring forcibly urges the cover disc against the beveled edge thereby resiliently deforming the latter so that the cover disc is tightly pressed against the retaining ring to effect a seal against foreign matter intrusion.

3,754,424
METHOD FOR NECKING-IN CAN BODIES

Samuel P. Costanzo, Sunnyvale, Calif., assignor to Gulf & Western Industrial Products Company, Salem, Ohio

Continuation-in-part of Ser. No. 136,958, April 23, 1971. This application May 17, 1972, Ser. No. 254,049
Int. Cl. B21d *19/06*
U.S. Cl. 72—105 **32 Claims**



Apparatus for necking-in at least one end portion of a substantially cylindrical can body includes expandable and contractable gripping means for positively gripping a peripheral surface of the can body over a major portion of the circumference and length thereof to positively hold the can body in a substantially cylindrical shape. Female and male forming rolls act against a terminal end portion of the can body to deform the terminal end portion inwardly. The female forming roll is positioned within an open end portion of the can body and is moved outwardly into engagement with the terminal end portion of the can body to form an outwardly extending flange thereon for stiffening the end portion of the can body against wrinkling. A male forming roll positioned outside of the can body is moved toward the female forming roll to neck-in the terminal end portion of the can body.

3,754,425

ROLLING MILLS

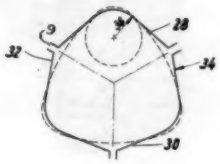
Ali Bindernagel, Dusselfdorf-Oberkassel, and Werner Demny, Dusseldorf, both of Germany, assignors to Friedrick Kocks, Dusseldorf, Germany

Filed July 14, 1971, Ser. No. 162,499

Claims priority, application Germany, July 7, 1970, P 20 35 482.9

Int. Cl. B21b *13/08, 13/10*

U.S. Cl. 72—234 4 Claims



A rolling mill is provided having a roll line made up of a plurality of successive three roll stands, each defining a pass, which line includes at least two sizing passes disposed beyond a row of flat passes, the rolls of each sizing pass having sizing grooves shaped so that the reduction in cross section of the work in the pass defined by the sizing grooves is at an analytical minimum when the work is in a non twisted state between passes.

3,754,426

ROLL CHANGING ARRANGEMENT FOR A ROLLING MILL

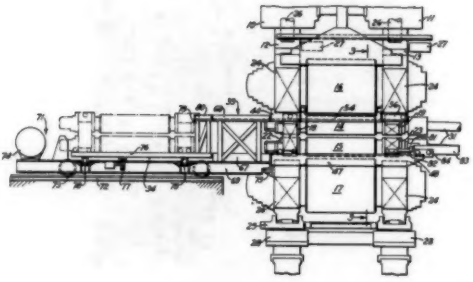
James Richard Adair, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Jan. 10, 1972, Ser. No. 216,599

Claims priority, application Great Britain, Feb. 25, 1971, 5,436/71

Int. Cl. B21b *31/08*

U.S. Cl. 72—238 11 Claims



The disclosure of this invention relates to a rolling mill wherein the chocks of the work roll on the drive side of the mill are split to enable the work rolls to be removed and replaced while strip is still being passed between the rolls. The chocks of the work rolls on the operating side can be nested or split. The work roll chocks are provided with wheels which during the roll changing operation are carried by a pair of upper tracks secured to the housings and chocks of the upper backup roll and by a pair of lower tracks carried only by the housings. A bridge is located at the front of the mill between a side shifting unit and the mill. The bridge has tracks which serve as continuations of the housing tracks and which receive the wheels of the work roll chocks as the rolls are brought to and from the mill to transfer them from and to the side shifter.

3,754,427

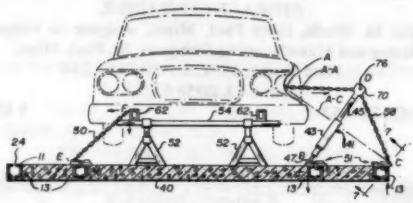
METHOD FOR REFORMING AND STRAIGHTENING MEMBERS

Wayne E. Hunnicutt, Big Bend, and Peter G. Rossbach, Waukesha, both of Wis., assignors to Applied Power Industries, Inc., Milwaukee, Wis.

Division of Ser. No. 744,824, July 15, 1968, Pat. No. 3,590,623. This application Apr. 19, 1971, Ser. No. 135,274

Int. Cl. B21d *11/02*

U.S. Cl. 72—302 6 Claims



A method and apparatus are disclosed for reforming and straightening members such as bent or damaged bodies and frames of vehicles, and portions thereof, wherein a force effective from a platform surface is applied via force transmitting means to straighten said bodies and frames.

3,754,428

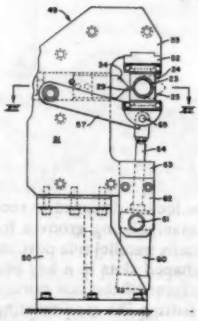
METHOD AND APPARATUS FOR SEVERING TUBING

Peter Alexoff, Poland, Ohio, assignor to George A. Mitchell Company, Youngstown, Ohio

Filed July 28, 1972, Ser. No. 275,924

Int. Cl. B21d *31/02*

U.S. Cl. 72—331 15 Claims



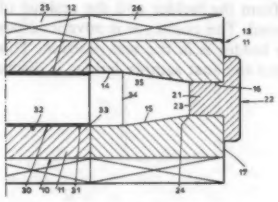
Method and apparatus for severing tubing using a conventional pointed shearing blade acting in one motion which fails to produce undesirable inwardly extending deformations. The normal circular shape of the tubing is deformed in jaws prior to shearing to include a portion projecting outwardly from the exterior surface of the tubing and presenting an apex. Then, beginning at the apex, the tubing is severed while the projecting portion is simultaneously reshaped to conform substantially with the normal circular shape of the tubing.

3,754,429

APPARATUS AND METHOD FOR SHAPING A CYLINDRICAL METAL TUBULAR COMPONENT

Robert Creuzet, Route de Beyssac, Marmande, France

Filed Jan. 20, 1971, Ser. No. 107,893
Claims priority, application France, Jan. 22, 1970, 7002258
Int. Cl. B21d 41/04
U.S. Cl. 72—342 3 Claims



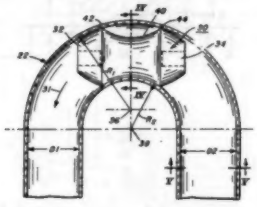
An apparatus and method for shaping an end of a cylindrical metal tubular component into a shaped mouth piece. A heated die is provided whose inner surface corresponds to the outer surface of the mouth piece to be produced, with means to progressively force said end into said die. In front of the die is provided a block having a duct for maintaining the tubular component in position during the forcing operation, cooling means surrounding said block to avoid a rise in temperature of the part of the component not in the course of being shaped.

3,754,430

METHOD AND APPARATUS FOR EXPANDING TUBES

Fred E. Halstead, Wayne, Ark., assignor to Halstead Industries, Inc., Felienople, Pa.

Filed Mar. 20, 1972, Ser. No. 236,313
Int. Cl. B21d 39/08
U.S. Cl. 72—370 8 Claims



Method and apparatus for expanding tubing, particularly metallic tubing having a U-shaped bend therein, wherein a plug is inserted into one end of the tubing and forced therethrough by fluid pressure. In order to facilitate passage of the plug around the U-shaped bend, the plug is provided with generally rounded (e.g., spheroidal) ends and a recessed central portion having a generally concave cross section. In this manner, the plug, under the influence of fluid pressure, can pass through straight sections of the conduit and can easily pass around a U-shaped bend therein without becoming jammed in the tube and without materially distorting the circular cross-sectional shape of the tube.

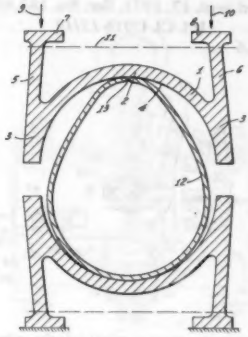
3,754,431

PRESS DIE FOR BENDING U-SHAPED BLANKS INTO PIPES

Detlef Ramdohr, Krefeld-Traar, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 9, 1971, Ser. No. 170,034
Int. Cl. B21d 37/10
U.S. Cl. 72—416 2 Claims

Press die with plural members for bending and rounding U-shaped blanks or sections thereof into pipes, each die member constructed as tunnel arch with rearwardly extended abutments for application of the pressworking forces. These extensions are sides that protrude beyond the tunnel apex, and they may be tensioned for control and adjustment of the contour of the working surface of the die member.

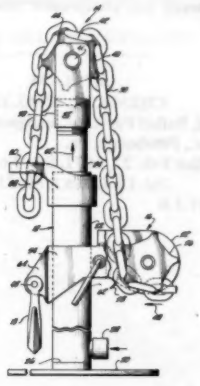


3,754,432

FORCE UNIT FOR METAL WORKING

William Kenneth Hagerty, 605 E. Norwood Pl., Alhambra, Calif.

Filed May 18, 1970, Ser. No. 38,406
Int. Cl. B21d 1/14
U.S. Cl. 72—447 22 Claims

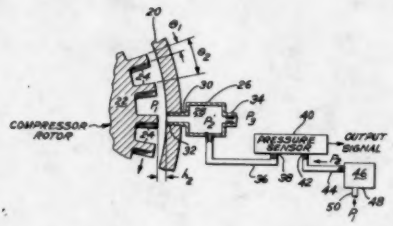


A force unit that may be readily employed to develop a pulling force for physically shaping, or molding, a work piece by bending, is disclosed. The force unit includes a power member which is physically moved by a hydraulically operated ram for the purpose of retracting a load chain or cable that is attached at one end to a stabilized work piece to be shaped and at an opposite end to the force unit. The ram is vertically mounted on an appropriate support. A fulcrum pulley is mounted at any vertical position along the length of the ram or a support post to which it may be attached. An anchor is employed to secure the force unit from movement in the direction of the work piece.

3,754,433
FLUIDIC PROXIMITY SENSOR

James M. Hyer, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 17, 1971, Ser. No. 181,455
Int. Cl. G01b 13/12
U.S. Cl. 73—37.6 10 Claims

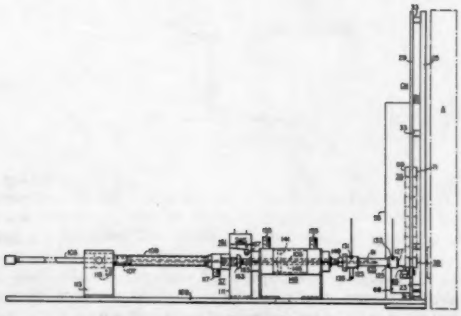


A fluidic proximity sensor particularly adapted to sense clearance between gas turbine engine compressor blade tips and adjacent wall of a compressor housing. In one embodiment, there is provided an air flow passage having a chamber with an inlet and a restricted outlet in series flow relationshp. The inlet receives compressor pressurized air and is arranged in a predetermined relatively close spaced-apart relationship with a compressor blade tip which sweeps the inlet to vary the effective flow area thereof. The resulting pressure pulses are integrated in the chamber and the resulting pressure compared to a regulated reference fluid pressure by means of a pressure differential responsive device, the output of which represents the radial clearance between the compressor blade tips and adjacent housing wall. In another embodiment, a second air flow passage connected in parallel flow with the above-mentioned air flow passage is provided with a pair of series flow restrictions between which a reference pressure is generated. The inlet to the second passage is not affected by the compressor blade tips. The reference pressure is compared to the chamber pressure representing the radial clearance between the compressor blade tips and adjacent wall.

3,754,434
CHEMICAL ANALYSIS

Lloyd V. Gulld, Bethel Park, Pa., assignor to Scientific Kit Corporation, Inc., Pittsburgh, Pa.

Filed Feb. 22, 1971, Ser. No. 117,646
Int. Cl. G01n 1/10, 31/08
U.S. Cl. 73—61.1 R 18 Claims

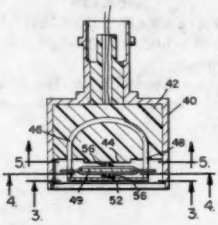


There is disclosed a method, apparatus, and parts such as a sample holder and a pipette for automatic chemical analysis of a plurality of samples by use of a chromatograph or the like. The samples are in unique sample holders which are advanced along a gravity conveyor, each in its turn being set in a test position. At the test position an entrance self-sealable septum of the sample holder is punctured by a hypodermic pipette having a sample-receiving chamber which is at reduced pressure. When the pipette enters the holder the sample is sucked into the chamber. Then the pipette punctures an exit self-sealable septum and enters the testing means, for example, the chromatograph. There the sample is rapidly evaporated from the pipette and the vapor analyzed. The pipette is then withdrawn from the holder and the residue of sample in the holder reduced. The conveyor is advanced one step so that a new sample holder is in the test position. This new holder is held and then the first sample holder is discharged from the conveyor.

3,754,435
MATERIAL TESTER

Milton F. Zeutschel, Issaquah, Wash., assignor to Automation Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 836,295, June 25, 1969, abandoned.
This application Nov. 15, 1971, Ser. No. 198,654
Int. Cl. G01n 29/04
U.S. Cl. 73—71.5 U 4 Claims



A nondestructive material tester is provided with a search unit capable of being air coupled to the workpiece under test. The search unit includes an electrically and acoustically nonconductive insert having an elevated surface between a transducer and the back reflective surface to form a restricted volume. The area between the transducer and the elevated surface causes an increase in the concentration of ultrasonic energy in this restricted volume and therefore increases the sensitivity of the search unit. A reflector is mounted over the transducer and positioned to cause destructive interference or out-of-phase reflections resulting in cancellation of the reflected waves.

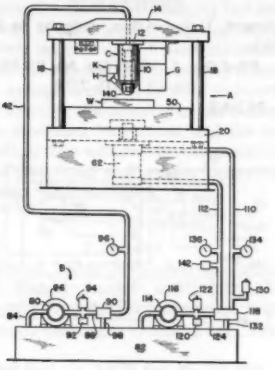
3,754,436
HARDNESS TESTING APPARATUS

Richard F. Saxton, 3270 Fairhill Dr., Rocky River, Ohio

Filed Aug. 31, 1972, Ser. No. 285,380
Int. Cl. G01n 3/42
U.S. Cl. 73—81 2 Claims

A hardness testing apparatus of the indenter type wherein

the work is held against movement during indentation by a fluid-actuated indenter and subsequent measurement of the



indentation by a laser-scanner-photoreader carried by the test head.

3,754,437

TORQUE LOADING DEVICE

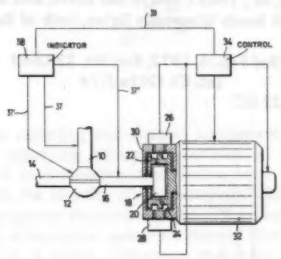
Horst Kanbel, Monheim-Baumberg; Lothar Saemann, Dusseldorf, and Manfred Baumgarten, Langenfeld, all of Germany, assignors to Aviatest GmbH, Dusseldorf, Germany

Filed Nov. 19, 1971, Ser. No. 200,497

Claims priority, application Germany, Nov. 21, 1970, P 20 57 347.1

Int. Cl. G01n *3/36*

U.S. Cl. 73—99 **7 Claims**



An installation for testing rotating workpieces as regards their behavior at different rotational speeds and different torque loads of a test program by means of an electric driving and braking motor and by means of a hydraulic coupling, in which the rotor of the motor preferably constructed as D.C. machine is rigidly connected with one of the coupling parts, and in which a control installation is provided for loading the coupling with torque shocks of such frequency, with respect to which the motor acts as flywheel, and for loading the motor with torque changes of a frequency lying below the same.

3,754,438

LOAD MEASURING DEVICE

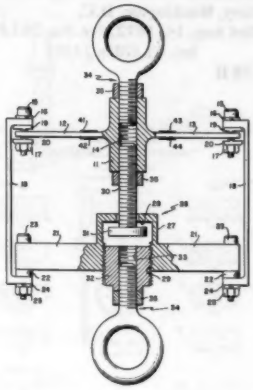
William U. Matson, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 256,865

Int. Cl. G011 *1/22*

U.S. Cl. 73—141 A **4 Claims**

This disclosure is directed to a load bearing fixture and more particularly to a fixture to which strain gauges may be secured to detect small changes in load compared to the load.



The fixture is further suitable for handling overloads which are many times that of the load.

3,754,439

OCEANOLOGICAL AND METEOROLOGICAL STATION

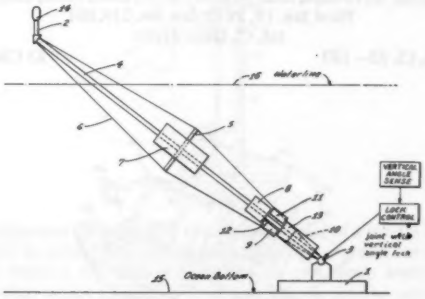
Peter Bauer, Bremen, Germany, assignor to Erno Raumfahrttechnik GmbH, Bremen, Germany

Filed Aug. 2, 1971, Ser. No. 167,999

Claims priority, application Germany, Aug. 5, 1970, P 20 38 870.9

Int. Cl. G01v *9/00*; G01w *1/00*

U.S. Cl. 73—170 A **5 Claims**

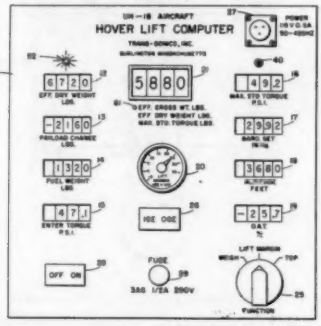


Equipment establishing a station for providing for oceanological and meteorological measurements in the continental shelf region and in similar, shallow parts of the ocean, and having a base anchoring the station to the bottom of the ocean, a mast pivotally linked to the base for up and down pivoting as well as for turning on a vertical axis; and variable buoyancy is provided at the mast above the point of pivoting. Instrumentation, including sensing means for taking oceanological and meteorological readings as well as a radio receiver transmitter and a controller are disposed on top of the mast.

3,754,440
HELICOPTER LIFT MARGIN DETERMINING SYSTEM

Bradford W. Edgerton, Lynnfield; Sidney B. Williams, Lexington, and Vernon C. Westcott, Lincoln, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1972, Ser. No. 281,079
Int. Cl. G01c 21/00
U.S. Cl. 73—178 H 8 Claims

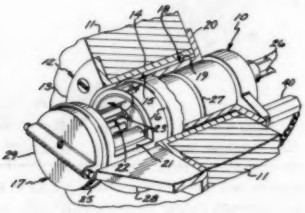


A system for determining in flight and continuously indicating to a helicopter pilot the lift margin of his craft is provided. Life margin as applied herein is the difference between the maximum available lift and the effective gross weight, both expressed in pounds, and is obtained from the ratio of lift to horsepower and the variation of the relative performance of the engine under ambient conditions. Input parameters of topping torque, hover torque, outside air temperature, static pressure, fuel weight, and rotor speed are both theoretically and empirically derived and combined to obtain maximum available lift and effective gross weight.

3,754,441
KNOTMETER

Charles W. Phillips, 2825 Newport Blvd., Costa Mesa, Calif.

Filed Jan. 19, 1972, Ser. No. 219,101
Int. Cl. G01c 21/10
U.S. Cl. 73—187 13 Claims



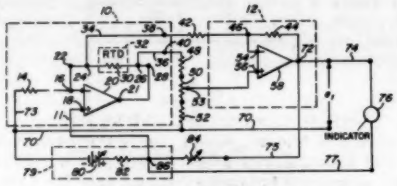
The present invention relates to a "speed indicator or knotmeter," for indicating the speed of a boat; and more particularly, relates to a knotmeter "sending unit" that may be easily and quickly withdrawn from and inserted through the hull of a boat.

The ease with which the sending unit may be handled encourages preventive maintenance, and facilitates repair when this is necessary.

3,754,442
TEMPERATURE MEASURING SYSTEM PRODUCING LINEAR OUTPUT SIGNAL FROM NON-LINEAR SENSING RESISTANCE

Charles J. Arnett, Union, Ohio, assignor to Instrulab, Inc., Dayton, Ohio

Filed Dec. 1, 1970, Ser. No. 93,984
Int. Cl. G01k 7/24
U.S. Cl. 73—362 AR 28 Claims

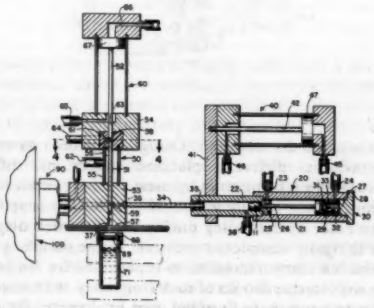


A temperature measuring and indicating system producing an electrical output signal which is substantially a linear function of the temperature sensed by a temperature sensitive resistance element which has a non-linear temperature resistance characteristic. One or more operational amplifiers or other current generators are used to excite the resistance temperature sensing element. The voltage generated across the temperature sensitive resistance element is sensed. Through a current generator a signal is induced in the temperature sensitive resistance element which is proportional to the difference between a given reference temperature and a temperature sensed by the temperature sensitive resistance element.

3,754,443
AUTOMATIC FLUID INJECTOR

Rano J. Harris, Sr., 1945 Carolyn Sue Drive, and Rano J. Harris, Jr., 9880 South Riveroaks Drive, both of Baton Rouge, La.

Filed Feb. 4, 1972, Ser. No. 223,663
Int. Cl. G01n 1/14
U.S. Cl. 73—422 GC 9 Claims



An apparatus for automatically accurately measuring and injecting quantities of fluid specimens, or samples, into various media, e.g., a receptacle or inlet of a modern analytical instrument. The automatic fluid injector includes generally a housing within which is mounted a needle syringe, or sample injector unit, and an injector feed unit or unit for automatically filling the said syringe, or sample injector unit. The housing is provided with an opening through which the needle portion of the syringe can be projected. The housing is located adjacent, and the opening thereof is aligned upon, the inlet of an analytical instrument within which fluid specimens are to be

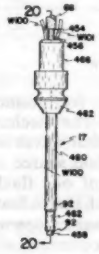
automatically periodically injected. Means are provided for movement of the syringe along a straight path for insertion and withdrawal of the needle from the opening. A reciprocable hollow probe associated with the injector feed unit picks up a fluid specimen from a fluid-containing vial delivered by a carrousel feed tray, or other type of feed tray, and conveys the fluid to the sample injector unit. A predetermined portion of the fluid specimen is trapped and accurately measured within the syringe, the syringe is carried forward to insert the needle portion thereof through the opening of the housing and into the inlet to the analytical instrument, and the sample is injected. The needle is then withdrawn. Automatic controls provide for cyclically cleaning and purging the syringe, and for filling and injecting fluid specimens.

3,754,444

MEDICAL SAMPLING AND READING

Spencer M. Ure, Midvale; Louis E. Davis; Darrell B. Steinicke, both of Bountiful, and Robert L. Morrell, Midvale, all of Utah, assignors to Bio-Logics Products, Inc., Salt Lake City, Utah

Filed Sept. 14, 1970, Ser. No. 71,969
Int. Cl. G01n *1/14*
U.S. Cl. 73—423 A **7 Claims**



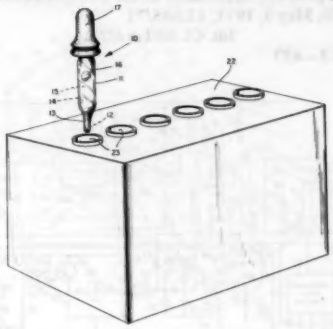
Automatic sampling and reading equipment and methods for use in supplying biological samples to an automatic analyzer and in correlating test results from the automatic analyzer with the identity of the patient providing each sample. The equipment successively indexes a tray of containers each having a biological specimen therein first to a sampling station where a probe withdraws a sample comprising a desired amount of specimen and later to a reading station where an encoded identification plate affixed to the adjacent container is electronically read. The reader at the reading station experiences relative displacement in respect to the identification plate being read, caused by the operation of a drive assembly, and hold-down or guard assembly is provided to insure an accurate reading during the indicated displacement. Withdrawn samples, separated by segments of air, water, and air, are delivered seriatim to the automatic analyzer which tests each sample. An output of the test results from the automatic analyzer in the form of a strip chart is correlated with a print out of the patient identification indicia sensed at the reading station so that the results of the tests are properly related back to the correct patient from whom a given specimen was originally taken. The probe is periodically purged, flushed or cleansed of residual sample by expelling water from the tip thereof into a discharge basin. Clean water is simultaneously displaced to the analyzer between samples, being insulated by air on each side as previously indicated. A mechanism is provided for discharging any clot or clogs from the probe which are experienced during operation of the sampling equipment. Also, a liquid level detector properly locates the probe in the sample.

3,754,445

ACID TESTER FOR BATTERIES

William A. Pavlo, Fleetwood, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Sept. 5, 1972, Ser. No. 286,213
Int. Cl. G01n *9/14*
U.S. Cl. 73—441 **10 Claims**



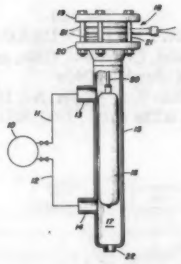
A device of the syringe type is provided, adapted to siphon electrolyte from cells of batteries, to ascertain, like a hydrometer, if the specific gravity of the electrolyte is sufficient to cause floating of a float in the electrolyte within the device, to determine the state of the charge, and with the float also having specific characteristics for advising the operator, if the test is being conducted at the proper temperature.

3,754,446

APPARATUS FOR MEASURING FLUID CHARACTERISTICS

Ward F. O'Connor, Deanville, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed June 3, 1970, Ser. No. 43,084
Int. Cl. G01n *9/00*; G01f *23/10*
U.S. Cl. 73—453 **8 Claims**

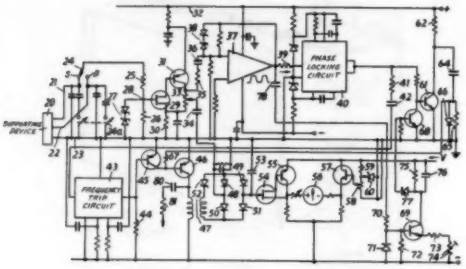


Apparatus for indicating the characteristics of a fluid is disclosed in accordance with the teachings of the present invention wherein the fluid is permitted to pass freely within a chamber which contains a float disposed for limited vertical movement and minimal lateral deflection. Vertical movement of the float is communicated to an electrically conductive member mechanically coupled thereto. The electrically conductive member is in close proximity and magnetically coupled to a magnetization inductance coil, causing variations in the inductive properties thereof thereby affecting the magnetic field generated by energization of the coil. Inductance of the coil or generated magnetic field is measured by remote measuring devices whereby the fluid characteristics are indicated. Alternatively, the electrically conductive material may be disposed in an electric field produced by a conducting plate, thereby effecting with said conducting plate, a variable capacitance means.

3,754,447
WHEEL BALANCING APPARATUS

Brian Turton-Smith; Trevor Edwin Clegg, and John Stevens, all of London, England, assignors to Westinghouse Brake and Signal Company Limited, London, England

Filed June 1, 1971, Ser. No. 148,336
Claims priority, application Great Britain, June 18, 1970, 29,155/70; May 3, 1971, 12,685/71
Int. Cl. G01m *1/22*
U.S. Cl. 73—457 **13 Claims**



In an on-the-car wheel balancer the wheel suspension is supported upon a jacking support which includes a force transducer, the wheel is rotated and the fundamental of the electrical signal produced by the transducer or a signal related thereto in a given manner, is utilized to produce a strobing pulse and an out-of-balance weight indication.

The fundamental due to wheel unbalance is cleared of noise due to suspension resonances by means of a tracking filter or preferably by means of a phase locking circuit which locks a multivibrator into the fundamental wheel frequency.

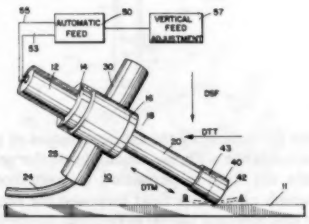
ERRATA

For Classes 73—506 thru 89—1.814 see:
Patents Nos. 3,754,471 thru 3,754,497

3,754,448
SONIC ENERGY METAL WORKING PROCESS

Raymond C. McDaniel, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed June 8, 1971, Ser. No. 150,957
Int. Cl. B23d *1/08, 13/00*; H01v *7/00*
U.S. Cl. 90—38 R **7 Claims**

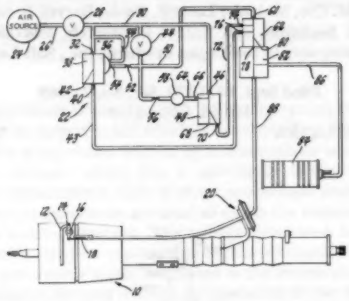


Utilization of a resonant electromechanical transducer for delivering high power (energy to a nonresonant load surface, excited from a fixed frequency power supply. The application of the tool to the work surface is accomplished by a flat surface tool coupled perpendicular to the horn axis and parallel to the end surface of the transducer tip. The sonic energy is delivered to the workpiece by coupling only a small fraction of the total tool surface to the work surface. The velocity of the cutting surface of the tool relative to the workpiece is a function of the excitation level of the transducer; the velocity being independent of the average velocity by which the transducer is moved across the work surface. The rate of removal of material in a metal cutting, chip forming, or shaving operation is a function of the excitation and the depth of cut independent of the transducer-transfer-velocity; whereas, outside of certain limits the transducer-transfer-velocity is utilized to reduce the cutting rate of the tool.

3,754,449
FLUIDIC CONTROL MECHANISM

Donald A. Niedzielski, Bay City, and Edgar C. Paffrath, Saaginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1971, Ser. No. 130,381
Int. Cl. F15b *13/042, 21/02*
U.S. Cl. 91—35 **3 Claims**

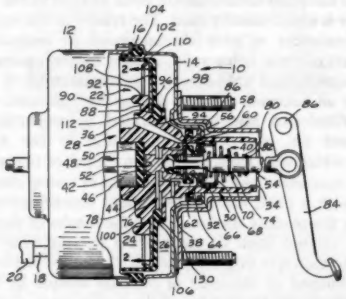


A fluidic mechanism for positioning a member to a predetermined position. The mechanism includes a pair of selectively operable control valves which control fluid communication between a fluid source and a plurality of fluidic amplifiers. The output of one fluidic amplifier controls a vacuum control valve such that actuation of both of the selectively operable control valves operates the vacuum control valve to provide fluid communication between a vacuum source and a vacuum motor. The output of the vacuum motor operates to control the positioning of the member.

3,754,450
INTERCHANGEABLE BACKING PLATE FOR MOVABLE WALL OF A SERVOMOTOR

James B. Putt, and Oswald O. Kytta, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 29, 1971, Ser. No. 184,773
Int. Cl. F15b *9/10*; F01b *19/00*
U.S. Cl. 91—376 **9 Claims**



A method of placing and retaining a backing plate on a valve control retaining hub of a servomotor adjacent a diaphragm.

3,754,451

METHOD OF ELIMINATING COHESION BETWEEN OVERLYING PLIES OF PLASTIC FILM MATERIAL

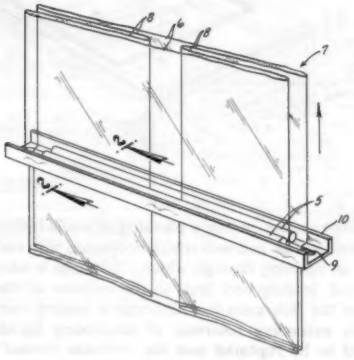
Thomas J. Dahlberg, Minneapolis, Minn., assignor to Possis Machine Corporation, Minneapolis, Minn.

Filed July 12, 1971, Ser. No. 161,669

Claims priority, application Great Britain, Aug. 24, 1970, 40,586/70

Int. Cl. B31b *1/78*

U.S. Cl. 93—1 R 1 Claim



Adhesion between the overlying plies of a flattened tubular web of plastic film material is eliminated by drawing the web lengthwise past a rod which is supported in a position transverse to the web and is interposed between its plies.

ERRATUM

For Class 93—41 see:
Patent No. 3,754,456

3,754,452

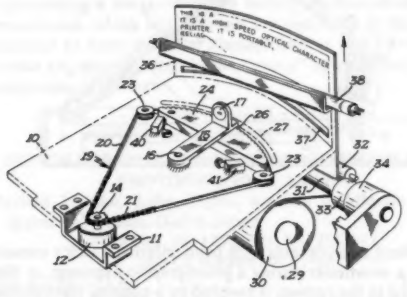
OPTICAL PRINTER

Leslie R. Walstrom, Excelsior, Minn., assignor to Fabri-Tek Incorporated, Minneapolis, Minn.

Filed Feb. 18, 1972, Ser. No. 227,391

Int. Cl. B41b *21/20*

U.S. Cl. 95—4.5 R 16 Claims



An optical printer having a rotating character font, a curved image receiving surface and a lens. The lens is moved incrementally through an arc by a stepper motor to project selected characters from the character font along a line on the image receiving surface. A damping system is provided to control undesired movement in the lens.

3,754,453

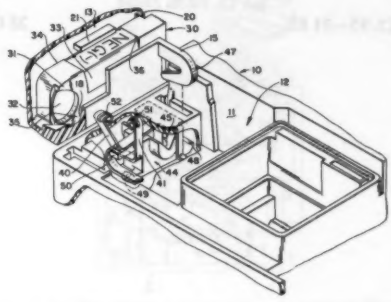
BATTERY RECEIVING MECHANISM FOR CAMERA

Paul J. Ernisse, and Joseph V. Poweska, both of Rochester, N.Y., assignors to Eastman Kodak Compay, Rochester, N.Y.

Filed July 29, 1971, Ser. No. 167,324

Int. Cl. G03b *19/00*

U.S. Cl. 95—11 R 7 Claims



A battery compartment is located in the film compartment cover where it may be swung out for ready accessibility. Battery contacts on the main camera housing are movable by a cam integral with the cover hinge in response to opening and closing the cover. Relative movement between battery and contacts cleans the contacting surfaces.

3,754,454

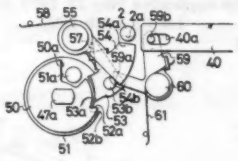
SAFETY APPARATUS FOR SHUTTER BUTTON IN CAMERA

Hiroshi Nakamura, Sakai, and Akio Okamoto, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1973, Ser. No. 323,016

Int. Cl. G03b *17/42, 19/04*

U.S. Cl. 95—31 R 6 Claims



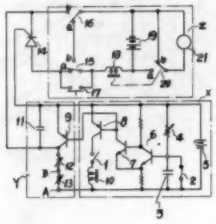
An apparatus comprising a rotary member rotatable in operative relation to a film winding operation, a driven member supported on the rotary member and rotatable with respect to the rotary member within a limited range, a release member downwardly movable by a shutter release operation and an engageable member urged toward the driven member by the winding operation but adapted to be urged toward the release member when the shutter is released. The engageable member has a portion engageable in and disengageable from a transport lock notch in the driven member and another portion engageable in and disengageable from a release lock portion of the release member, the engageable member being disposed with at least one of the engageable and disengageable portions engaged in the notch or the release lock portion. The apparatus further includes means for braking the driven member at least from an intermediate stage of the winding operation until the completion of the winding operation and means for retaining the driven member at its overcocked position upon the driven member reaching this position and permitting the rotary member to rotate reversely by the overcocked amount.

3,754,455

MOTOR DRIVEN STILL CAMERA

Kayoshi Tsujimoto, Osaka City; Yoshio Kuramoto, Toyonaka City, and Toshio Kobori, Sakai City, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sept. 24, 1971, Ser. No. 183,603
Claims priority, application Japan, Oct. 7, 1970, 45/88480; Oct. 30, 1970, 45/96084; Nov. 26, 1970, 45/105205
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 EL 25 Claims



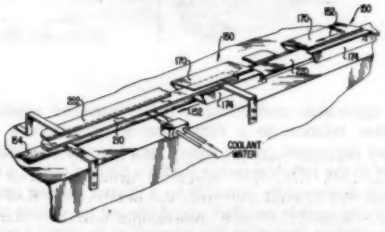
In a still camera having a motor for advancing a film, the motor is actuated by means of a trigger-signal which is to be produced after an adjusted delay time after deenergization of an electromagnet for holding a previously opened shutter in the open state to the start of rotation of the motor. By adjusting the pause time appropriately, the film starts advancing without redundant delay, thereby enabling the efficient consecutive taking of many pictures over a predetermined period of time.

3,754,456

BLANK CONSTRUCTIONS FOR HERMETICALLY SEALED CARTONS AND METHODS OF FORMING SAME

William P. Andrews, Richmond and Vincent J. Serio, Jr., Henrico County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 876,699, Nov. 14, 1969, abandoned. This application May 27, 1971, Ser. No. 147,469
Int. Cl. B31b *1/36*
U.S. Cl. 93—41 10 Claims



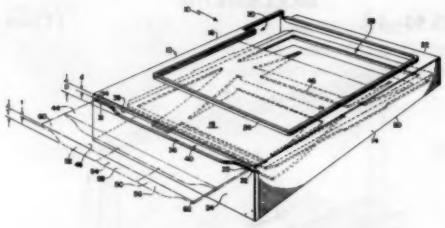
Blank constructions for use in making hermetically sealed, lined carton constructions formed continuously from strips of paperboard stock and liner material. An improved side seam construction is also disclosed wherein a paperboard-to-paperboard seal is obtained when using a liner material at least the outer surface of which is metal foil. The blank construction is formed by methods which permit one end of the liner material to overhang the paperboard stock material whereby covered side seams are provided which prevent air or liquid leakage through the pores of the paperboard stock. An R.F. induction heating method is disclosed for making side seams on lined cartons.

3,754,457

PHOTOGRAPHIC CASSETTE

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 27, 1972, Ser. No. 275,536
Int. Cl. G03b *19/10*
U.S. Cl. 95—19 14 Claims



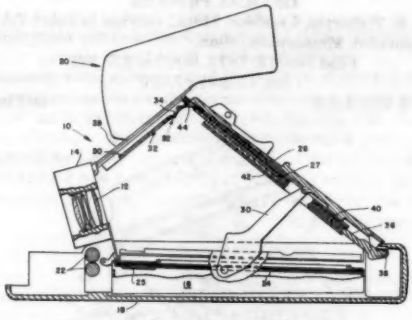
A film cassette having a plurality of walls including a forward wall and an end wall which cooperate with each other to define an opening through which a film unit is adapted to be advanced, leading end first, to the exterior of the cassette. Each of the film units includes near a leading end thereof a laterally extending reservoir of processing liquid which is adapted to be ruptured and the contents thereof spread in contact with a photosensitive element of the film unit to initiate formation of a visible image in the film unit. The slot has a configuration similar to that of the film unit and reservoir, as viewed leading end first, in order to prevent the movement of more than one film unit at a time from the cassette.

3,754,458

LIGHT SEAL FOR A REFLEX CAMERA VIEWFINDER

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 9, 1971, Ser. No. 151,255
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 12 Claims

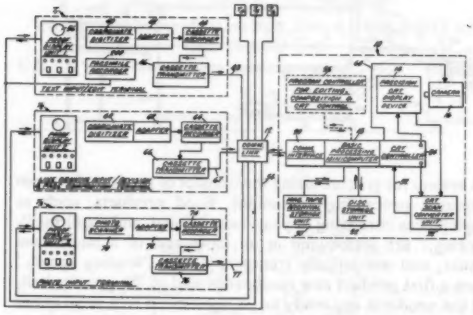


A resilient flap prevents light from entering a reflex camera through a viewfinder during a photographic exposure. A film unit stored in the camera is covered by a capping plate during framing and focusing. When the shutter operates, the capping plate pivots about one end to uncover the film unit for an exposure. The resilient flap is swung by the free end of the capping plate to a position where it will block light which would otherwise enter the camera through the viewfinder. The use of a resilient material in the flap allows it to conform to a non-rigid wall which separates the viewfinder from the camera.

3,754,459
IDEOGRAPHIC-LANGUAGE INPUT APPARATUS PUBLICATION SYSTEM UTILIZING SAME

Aaron H. Coleman, Levittown, Pa., and Hugh W. Stewart, Princeton, N.J., assignors to CPS Associates, Inc., Croydon, Pa.

Filed June 2, 1972, Ser. No. 259,195
Int. Cl. B41b *13/10*
U.S. Cl. 95—4.5 4 Claims



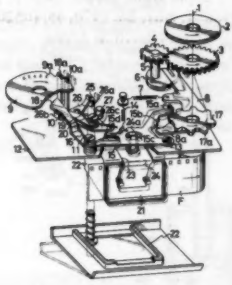
A coordinate digitizer is utilized in a phototypesetting automatic publications system, by means of which ideographic symbols are selected and electrically entered into the system. An array or "menu" of ideographic symbols is provided, and a coordinate digitizer including a pointer is connected so that designation of a particular symbol in the array by the pointer causes the generation of signals representative of the coordinates of that symbol in the array. A computer memory stores data for each of the symbols so that when coordinate signals corresponding to a particular symbol in the array are supplied to the computer means, the corresponding data are retrieved and utilized to form that symbol in the phototypesetter. The data thus retrieved from the computer memory are also utilized to operate a local symbol display, such as a facsimile recorder or cathode-ray tube display device, positioned adjacent the coordinate digitizer so that rapid proofing of the entered symbols may be provided. Preferably the ideographic-data input terminal is remote from the computer storage means and connected thereto by an appropriate communications link, and preferably scan converting means are provided adjacent the computer storage means to produce signals representing a lower-definition version of the symbols to be reproduced, which latter signals are sent back to the remote terminal to form the local display. Editing and format commands are also included in the "menu" to effect editing and composing of the text.

3,754,460
DEVICE FOR OPERATING FILM PRESSURE PLATE IN PHOTOGRAPHIC CAMERA

Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 10, 1972, Ser. No. 225,211
Int. Cl. G03b *1/48, 1/66*
U.S. Cl. 95—31 R 10 Claims

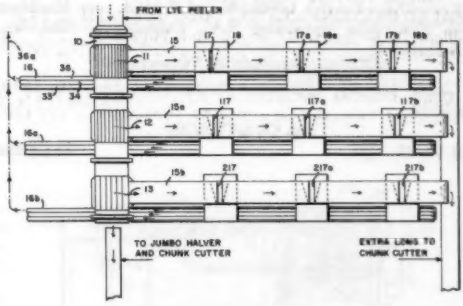
A device includes winding means and counter driving means. The winding means has a drive cam rotatable in one direction in operative relation to a film winding operation and to be stopped after completing a definite angle of rotation when the film has been transported by one frame. Under the control of the winding means, the counter driving means is rapidly moved in a first direction upon initiation of the winding operation and returned in a second direction opposite to the first direction upon completion of the winding operation. A film pressure plate is associated with the counter driving means to free the film from pressure simultaneously with the initiation of the film winding operation and press the film upon completion of the winding operation.



3,754,461
FRESH VEGETABLE PROCESSING

Louis P. Lazzarini, San Jose, Calif., assignor to Genevieve I. Hanscom, Robert Magnuson, Lois J. Thomson as Trustees of the Estate of Roy M. Magnuson, deceased

Filed June 21, 1971, Ser. No. 154,783
Int. Cl. A23n *15/00*
U.S. Cl. 99—233.7 2 Claims



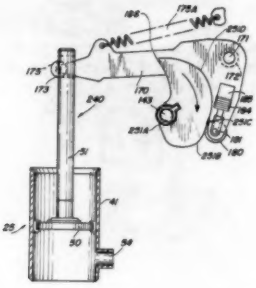
The processing apparatus is adapted to work on washed and cleaned field run fresh vegetable articles such as sweet potatoes, for example, wherein the potatoes are first graded for diameter and separated, for example, into three diameters, and each of the three diameter groups is then separately subjected to a length grading step to sort to four length subgroups including the extra large sweet potatoes, for example, that go over the end of the conveyors.

Each length subgroup is then placed on a feeding and cutting device such as a shuffle feed mechanism wherein the potatoes are arranged in rows as they are being fed along, and in certain rows adjacent the end of the shuffle feed there are formed article centering pockets or recesses and the potatoes are fed through slicing knives and cut into segments. The respective segments are placed in different conveying positions, and the discharge from each subgroup of the various sized groups by diameter are again mingled, and the potatoes are carried to a canning position or a processing position of some sort.

3,754,462
INFUSOR DRIVE MEANS

Frank D. Brill, Norridge, Ill., assignor to The Seeburg Corporaton of Delaware, Chicago, Ill.

Filed Sept. 28, 1971, Ser. No. 184,499
Int. Cl. A47j *31/18, 42/46;* A47g *19/14*
U.S. Cl. 99—287 1 Claim

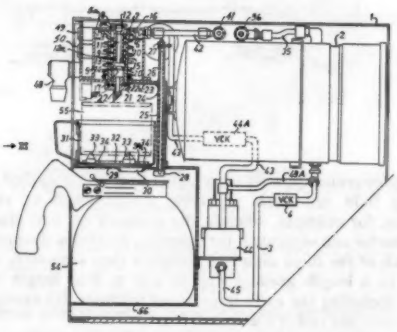


An infusor apparatus for a coffee brewing machine has a cam driven piston means. The cam has appropriate dwells formed thereon to interrupt the travel of the piston means during the compression stroke approximately halfway along the stroke and again at the completion thereof, in order to relieve the pressure within the chamber during and after brewing so that infusible or brewed material will not be blown from the chamber when it is suddenly opened after brewing is completed.

3,754,463
MACHINE FOR MAKING COFFEE AND THE LIKE

Thomas Maria Vernooy, De Meern, Netherlands, assignor to Koninklijke Fabriek Inventum and Fabriek voor Machines en Elektrische Apparaten N.V., Leijenseweg, Bilthoven, Netherlands

Filed Dec. 29, 1971, Ser. No. 213,611
Claims priority, application Netherlands, Dec. 28, 1970, 7018834
Int. Cl. A47j *31/00*
U.S. Cl. 99—295 25 Claims

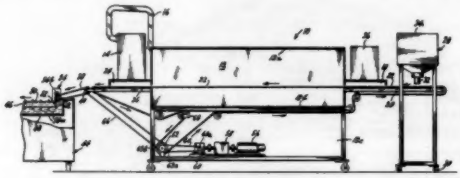


A machine for making a beverage such as coffee. A can piercing member is adapted to move up and down relative to a housing having a reservoir in which water can be heated and then passed through the can. The reservoir communicates with a cylinder having a piston, so that the expansion of the water in the reservoir due to heating causes relative displacement of the piston and the cylinder, and this displacement causes the piercing member to perforate the container for the coffee or similar material.

3,754,464
CONTROL SYSTEM

Harold B. Kaufman, Jr.; Ernest W. Stein, both of New York, and Robert F. Schiffmann, Brooklyn, all of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,462
Int. Cl. A23 ; A47j
U.S. Cl. 99—334 14 Claims

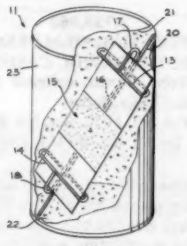


A system for synchronizing the transfer of products between sequential processing equipment. Food products, such as dough pieces consisting of yeast raised dough and requiring "-proofing," are introduced at an input end of a microwave proofer, and are initially transported at a "loading speed." When a first product row reaches the end of the proofer belt, and the products are ready to be transferred to a subsequent food processor such as a fryer, which may move the products at a different and independently controlled speed, the proofer transport is temporarily halted. The production cycle then commences. During the production cycle, the system provides intermittent start-stop operation of the proofer transport mechanism, advancing the proofer conveyor (at a higher "-discharge speed") each time that the fryer conveyor belt advances into the next dough piece receiving position, and stopping the proofer conveyor in response to the readiness for transfer of each subsequent row of product into the continuously moving pockets of the fryer conveyor. Additional rows of raw product pieces are periodically deposited at the proofer's input end each subsequent time that the proofer conveyor is halted. Timing and processing controls for the transport equipment and for related sub-systems are included to insure synchronized product transfer, to accurately control proofing and transport periods and to provide regulation or proofing interval independently of the processing interval or speed of the subsequent frying equipment.

3,754,465
CENTER-OF-CAN HOLDER FOR A TELL-TALE INDICATOR CARD

Vincent A. Romito, North Hollywood, and Arthur W. Hanna, Sunland, both of Calif., assignors to Sterilizer Control Royalties, North Hollywood, Calif.

Filed Jan. 14, 1972, Ser. No. 217,864
Int. Cl. A47j *27/212;* G01k *11/20*
U.S. Cl. 99—342 6 Claims



A device for holding an indicator card at a position near the geometric center of a sealed pilot can containing food or the like for sterilization thereof, thus providing a record of the time-temperature effect at the center of the contents of the

can, to which said can has been subjected in the processing for cooking and/or heat sterilization thereof.

3,754,466

APPARATUS FOR THE IMPREGNATION TREATMENT AND EVENTUAL STERILIZATION OF COCOA SEEDS OR BEANS WITH WATER OR ALKALINE SOLUTIONS

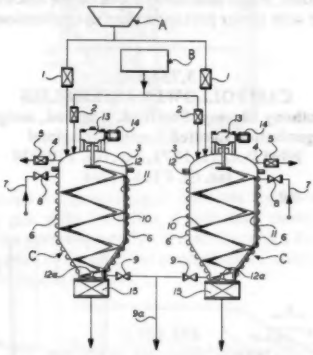
Claudio Taralli, and Elio Stefani, both of Milan, Italy, assignors to Carle & Montanari S.p.A., Milan, Italy

Division of Ser. No. 881,414, Dec. 2, 1969. This application Mar. 10, 1972, Ser. No. 233,530

Claims priority, application Italy, Dec. 4, 1968, 24571 A/68

Int. Cl. B01f *7/16*

U.S. Cl. 99—348 10 Claims



A process for impregnating a substance, such as cocoa seeds or beans, with a fluid, such as water or an alkaline solution. The substance is subjected to vacuum action in a suitable environment for a selected period of time, and then mixed with the fluid in an impregnating environment at a pressure of at least one atmosphere. The impregnated substance is rapidly dried in an environment at a pressure which is less than one atmosphere.

3,754,467

HEAT PROCESSING OF CANNED FOODSTUFFS

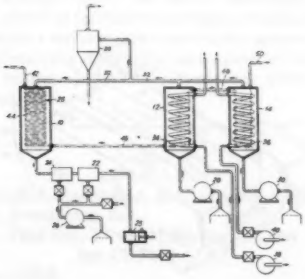
Ronald Jowitt, Kent, Beckenham, and Stuart Nigel Thorne, Cambridge, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 26, 1971, Ser. No. 119,310

Claims priority, application Great Britain, Feb. 27, 1970, 9,727/70

Int. Cl. A23b *3/02*

U.S. Cl. 99—361 7 Claims



An apparatus for heat-processing canned foodstuffs has a gas-fluidised heating bed optionally followed by one or more gas-fluidised cooling beds. The cans are fed downward through the heating bed so as to subject them to a progressively increasing external pressure which compensates for rises in their internal pressure as they are heated.

3,754,468

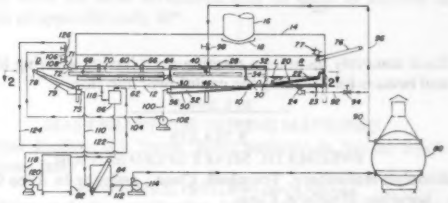
APPARATUS FOR DEEP-FAT COOKING

Edward S. Wright, Pittsburgh, Pa.; John W. Angstadt, Williamsville, and Gerard L. Garrow, Buffalo, both of N.Y., assignors to Blaw-Knox Company, Pittsburgh, Pa.

Filed Jan. 21, 1971, Ser. No. 108,303

Int. Cl. A47j *37/12*

U.S. Cl. 99—403 12 Claims



A new process and apparatus for the continuous deep-fat cooking of a food to produce a processed comestible wherein the food is passed through an elongated cooking zone. Hot cooking oil is introduced and withdrawn from the cooking zone at a plurality of points to produce hydraulic effects which insure proper contact of the food with the cooking oil.

3,754,469

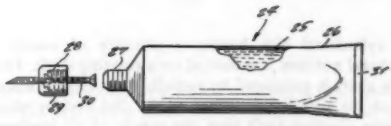
ALL PURPOSE FLAVOR FOR POULTRY AND MEATS

Bernard Gaslor, 3434 E. Grange Ave., Cudahy, Wis.

Filed Sept. 27, 1971, Ser. No. 183,820

Int. Cl. A23b *1/16*; A47j *43/00*; A22c *17/00*

U.S. Cl. 99—532 1 Claim



An injection syringe for injecting a prepared flavoring into poultry or meat prior to a cooking operation, the device comprising a cylinder containing a slideable piston, the piston being attached to one end of a piston rod extending outward of one end of the cylinder, the outer end of the piston rod having a convenient handle for purpose of being depressed, and the opposite end of the cylinder having a hollow needle secured there to for insertion into the poultry or meat interior.

3,754,470

CAULIFLOWER CORING AND FLORETING APPARATUS

Edward E. Console, deceased, late of Watsonville, Calif. (by Edward T. Console, Executor), assignor to Watsonville Canning & Frozen Food Co., Watsonville, Calif.

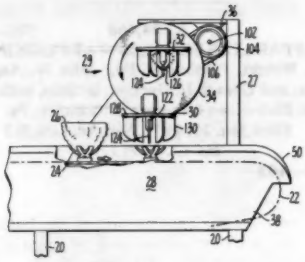
Filed June 15, 1971, Ser. No. 153,378

Int. Cl. A23n *3/12*

U.S. Cl. 99—538 7 Claims

Apparatus for simultaneously coring and floreting produce such as cauliflower. Cauliflower being conveyed is engaged al-

ternately by a pair of overhead supported cutting and floreting assemblies disposed on the periphery of a rotating turntable.

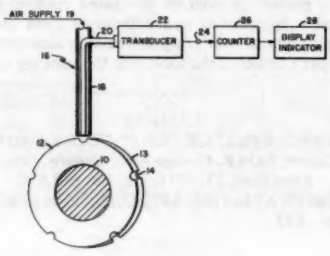


Each assembly includes a rotating shaft having a coring blade and beaters for breaking the cauliflower into florets.

3,754,471
PNEUMATIC SHAFT SPEED SENSOR

Rudolph Hohenberg, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Feb. 23, 1972, Ser. No. 228,660
Int. Cl. G01p *3/26*
U.S. Cl. 73—506 **6 Claims**



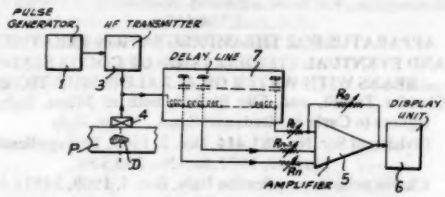
A cylindrical disk having a plurality of evenly spaced peripheral notches is mounted on a rotating shaft. The speed of the shaft is measured by radially directing air under pressure to the peripheral surface of the disk and by sensing the pressure changes each time the supply of air impinges on a notched portion. In a second embodiment air is axially directed onto the planar surface of a rotating disk provided with apertures or indentations. In a third embodiment air is directed onto a planar surface which is moving linearly.

3,754,472
APPARATUS FOR ANALYSING BY MEANS OF ULTRASONIC PULSES, EMPLOYING THE REFLECTING PROFILE CHARACTERISTIC OF EACH OBSTACLE

Jacques Dory, 91, rue des Molvaux, 77 Coupvray, France, assignor to Realisations Ultrasoniques, Paris, France

Filed Mar. 4, 1971, Ser. No. 120,851
Claims priority, application Great Britain, July 24, 1969, 25,337/69
Int. Cl. G01n *21/00*
U.S. Cl. 73—67.9 **5 Claims**

For analyzing discontinuities which perturb the propagation of acoustical waves in a given medium, in particular for detecting flaws in a mechanical piece, there is provided an apparatus comprising means for dividing each of the echo signals reflected from the discontinuity into a plurality of elementary signals having predetermined relative amplitude and time delays and means for establishing the sum of said elementary signals.

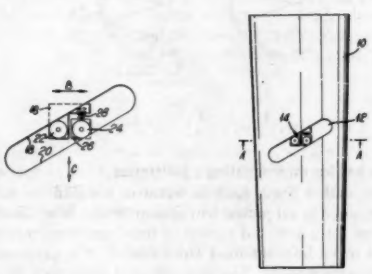


The position, shape and dimensions of the discontinuity are determined with better precision than in conventional devices.

3,754,473
CAM FOLLOWER ASSEMBLIES

Richard Anthony Massey, Sheffield, England, assignor to The Rank Organisation Limited, London, England

Filed Dec. 22, 1971, Ser. No. 210,934
Int. Cl. F16h *21/44*
U.S. Cl. 74—99 **5 Claims**

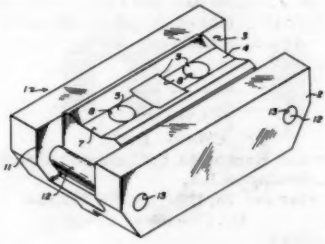


A cam follower assembly comprises two followers biased apart, in a direction transverse to the movement controlled by the cam, against two cam faces. By attaching the element moved to one follower, movement in either direction is controlled by one cam face, and accurate control can be achieved with a small assembly.

3,754,474
GRIPPER PAD

Alexander Palynchuk, Edmonton, Alberta, Canada, assignor to Corod Manufacturing Ltd., Edmonton, Alberta, Canada

Filed Sept. 1, 1971, Ser. No. 176,952
Int. Cl. F16d *41/20*
U.S. Cl. 74—162 **4 Claims**



A gripper pad, for use in a track-type continuous rod service rig, is provided. The pad comprises a deformable elastomer

block having a series of aluminum studs embedded in its upper face. The provision of the studs results in higher pressure being applied to the rod, against which the pad is squeezing, than is applied to the block itself by the rig track.

3,754,475

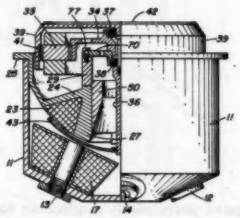
CONTROLLABLE PRECESSION GYROSCOPE

Lloyd A. Iddings, Arlington, Va., assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 10, 1972, Ser. No. 216,434

Int. Cl. G01c *19/30*

U.S. Cl. 74—5.46 **3 Claims**



A gyroscope for generating a drift rate for an optical lead computing gun sight including a particular flexure plate for mounting the gyroscope eddy-current disc and a four pole permanent magnet of a particular configuration which provides a fail-safe function in the device.

3,754,476

MOTION TRANSFORMER

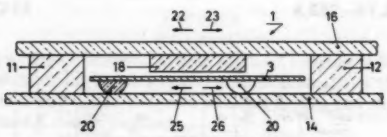
Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt Et Freres, S.A., Biene, Switzerland

Filed Apr. 17, 1972, Ser. No. 244,772

Claims priority, application Switzerland, May 5, 1971, 6686/71

Int. Cl. F16h *27/02*

U.S. Cl. 74—128 **5 Claims**



In a motion transformer for converting oscillatory to rotary motion, comprising a ratchet wheel mounted for both oscillatory and rotary motion, a pair of stops limiting the amplitude os such oscillatory motion, and a ratchet pawl coacting with the ratchet wheel and a restraining member preventing retrograde rotation thereof to convert oscillatory motion of the ratchet wheel to unidirectional rotary motion, the ratchet pawl comprises a resilient pawl arm fixedly mounted adjacent one end and carrying at the other end a pawl jewel in the form of a wafer having a convexly curved edge which abuts the ratchet wheel teeth.

3,754,477

CHAIN LINK

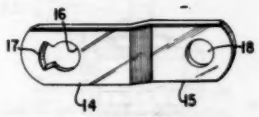
James L. Bonifas, Huntington, Ind., assignor to Stellar Industries, Inc., Huntington, Ind.

Filed Dec. 28, 1971, Ser. No. 212,964

Int. Cl. F16g *13/02*

U.S. Cl. 74—250 R **7 Claims**

A chain link comprises a pair of spaced sidebars having opposed pairs of link pin receiving apertures adjacent the ends thereof and a bushing interconnecting one pair of apertures to define a link pin receiving passage. The ends of the bushing are provided with axial extentions which are seated in arcuate notches formed in the sidebars adjacent the apertures connected by the bushing. That portion of the bushing sidewall away from the axial extensions may be open to subtend an angle of approximately 90°.



3,754,478

MAIN SHAFT FOR SEWING MACHINES

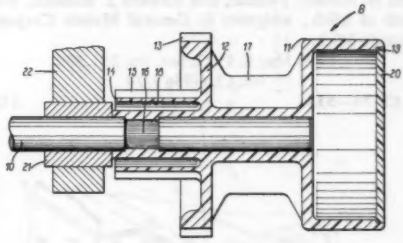
Silvano Perlino, 33, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

Filed Nov. 12, 1971, Ser. No. 198,121

Claims priority, application Italy, Nov. 17, 1970, 42969 A/70

Int. Cl. F16h *55/00;* **B29b** *3/00;* **D05b** *69/00*

U.S. Cl. 74—432 **2 Claims**



The invention relates to a means whereby a shaft and various normally separately made rotary members may all be assembled in essentially a single step. The shaft is inserted into a mold and the other rotary members are molded therearound as a one piece body.

3,754,479

SELECTIVE ASSEMBLY POWER STEERING MECHANISM

Dieter Elser, Bobingen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Postfach, Germany

Filed May 23, 1972, Ser. No. 255,974

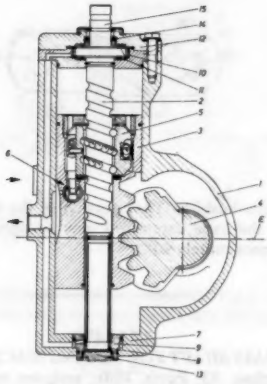
Claims priority, application Germany, May 26, 1971, P 21 26 090.2

Int. Cl. B62d *1/20*

U.S. Cl. 74—499 **5 Claims**

A power steering mechanism is constructed for selective assembly so that a steering worm spindle may protrude from either end of a housing, the opposite end being sealed. The housing ends are constructed dimensionally so that interchangeable bearings and seals can be applied and either of a pair of steering worm spindles used, depending on the space into which the housing must be fitted in a vehicle. This

minimizes dimensional space requirements. Similarly, either of a pair of housings may be selected, usable with either one of



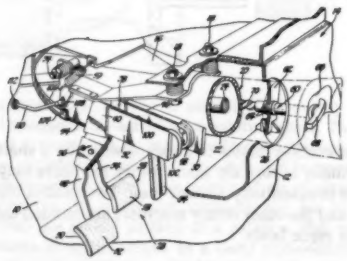
the aforementioned pair of spindles, thereby effecting choice of four assembly arrangements.

3,754,480

VEHICLE CONTROL APPARATUS

Alfred D. Bodnar, Pontiac, and Edward J. Rudaitis, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 8, 1972, Ser. No. 251,399
Int. Cl. G05g 1/14
U.S. Cl. 74—512 **3 Claims**



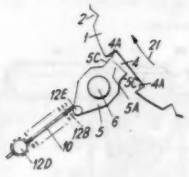
Adjustable control apparatus particularly adapted for control of automobile operating systems normally actuated by the foot of the vehicle operator, the apparatus including a pair of pivot bars supported on the vehicle body for pivotal movement about a common fixed axis, a pair of pedal support members slidably mounted on respective ones of the pivot bars, pedals rigidly connected to each of the pedal support members and defining pressure application surfaces oriented to direct forces applied thereto along lines extending obliquely to the pivot bars so that bodily shiftable movement of the pedal support members alters the lever arms of the applied forces about the fixed axis, an adjusting member supported on the vehicle body for selective bodily shiftable movement and motion transmitting cable assemblies between the adjusting member and the pedal support member adapted to effect movement of the latter synchronously with movement of the former.

3,754,481

TURNSTILE OR LIKE MECHANISMS

Terence John Collins, Redhill, Surrey, England, assignor to Tiltman Langley Limited, Surrey, England

Filed Sept. 17, 1971, Ser. No. 181,314
Claims priority, application Great Britain, Sept. 3, 1970, 42,262/70
Int. Cl. G05g 5/06
U.S. Cl. 74—527 **5 Claims**



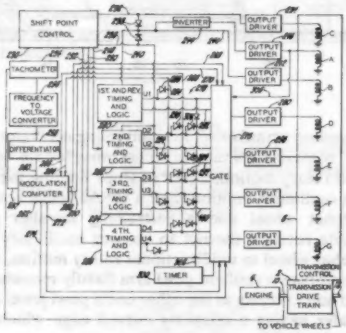
A reversible pawl particularly applicable to rotary toothed members associated with turnstiles is provided not only with the normal return spring tending to position the pawl neutrally but a secondary spring preferably with high damping characteristics, so arranged that in a rest position the pawl is biassed in one sense of operation or the other according to which was the last operational movement of the toothed member.

3,754,482

METHOD AND APPARATUS FOR CONTROLLING TORQUE CAPACITY IN TORQUE TRANSMITTING DEVICES

Robert K. Sanders, Whitestown; Jerry R. Marlow, Greenwood; Kenneth A. Dornfeld, and Robert E. Nelson, both of Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 28, 1971, Ser. No. 147,969
Int. Cl. F16h 3/74
U.S. Cl. 74—752 A **13 Claims**

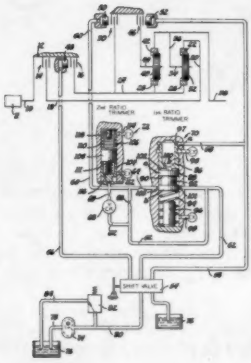


In a power transmission wherein a ratio change is accomplished by engaging one clutch or brake and disengaging another, a smooth shift is effected by modulating the torque capacities of the clutches or brakes during the shift as a function of transmission input speed. Pressure responsive clutches and brakes are controlled by solenoid valves which produce pressures proportional to solenoid current. An electronic control computes the desired pressures according to variation of input speed. A plurality of shift valves each have a differential area portion responsive to engagement pressure to control the engagement of a clutch or brake and a control chamber responsive to the variable control pressure.

3,754,483
TRANSMISSION AND CONTROL WITH SHIFT ENGAGEMENT TIMING DEVICES

John O. Edmunds, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 11, 1971, Ser. No. 197,903
Int. Cl. F16h *5/18, 57/10;* F16d *67/04*
U.S. Cl. 74—753 8 Claims

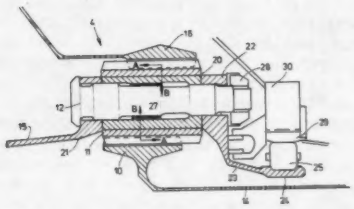


A transmission and control in which the transmission has three mechanical gear ratios which are selectively established by the control. The control provides through the use of a plurality of fluid restrictions one engagement time of the intermediate ratio control device during an upshift from the first ratio to the second ratio and another engagement time of the intermediate ratio control device during a downshift from third ratio to second ratio. The control also provides a bypass valve so that the disengagement time of the intermediate ratio control device is not affected by the fluid restrictions during a second to third or second to first ratio change.

3,754,484
GEARING

Martyn Grigson Roberts, Bristol, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 3, 1972, Ser. No. 214,942
Claims priority, application Great Britain, Jan. 8, 1971, 946/71
Int. Cl. F16h *1/36, 57/08*
U.S. Cl. 74—801 2 Claims

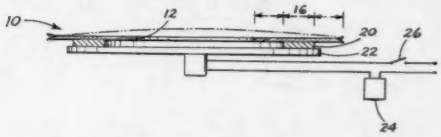


In an epicyclic gear box all the teeth of the various gear wheels are of single helical form. The tipping couple produced on the planet wheels due to the helix angle of the teeth is balanced by displacing the sun and annulus gears in opposite directions along the planet wheel axis so that the radial components of the tooth loads due to the pressure angles of the teeth produce an opposing couple.

3,754,485
CIRCULAR SAW TENSIONING METHOD AND APPARATUS

Russell A. Heitzman, 826 Story, McMinnville, Oreg.

Filed Dec. 30, 1971, Ser. No. 214,020
Int. Cl. B23d *65/00*
U.S. Cl. 76—112 7 Claims

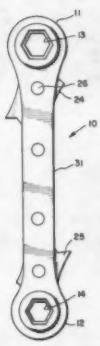


Circular saws having faces of unequal tension and which accordingly will not saw true are tensioned by selectively heating a central area of the saw, thereby causing the saw to dish. Taking advantage of the fact that the more highly tensioned face of the saw is the concave face thereof, the tension then is equalized by hammering the convex face thereof in areas and with an intensity sufficient to equalize the tension in both faces.

3,754,486
RATCHET WRENCH

William H. Mariner, South Pack Dr., Ext. Rt. 4, Salisbury, Md.

Filed July 26, 1971, Ser. No. 165,995
Int. Cl. B25b *13/46*
U.S. Cl. 81—63 5 Claims



An improved box end wrench of double end type, each end having double socket sizes, each being rotatably controlled by a ratchet mechanism having a pivoted latch movable to two positions whereby the socket will rotate only in one direction when the latch is in one position and will rotate only in the opposite direction when the latch is in the other position so that turning torque can be transmitted by the wrench in the same direction of rotation regardless which side of the socket is used.

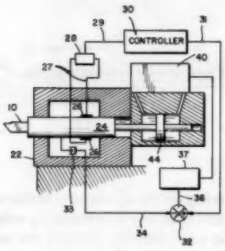
3,754,487
METHOD AND APPARATUS FOR CONTROLLING A MACHINE TOOL

Chester L. Nachtigal, 1310 S. 12th St., Lafayette, Ind.

Continuation of Ser. No. 885,686, Dec. 17, 1969, abandoned.
This application Jan. 3, 1972, Ser. No. 215,200
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C 7 Claims

A method and apparatus for controlling the operation of a machine tool on a workpiece in which said workpiece and tool

are mounted in a machine tool assembly in a position to permit said tool to engage the workpiece to perform work operations thereon and in positions such that a pair of reference points on said workpiece and tool are disposed in spaced relationship. One or both of the workpiece and tool are connected to a first driving member for effecting relative movement between them so that said tool will perform the desired work



on the workpiece at their interface. The force exerted on the workpiece by the tool at their interface is detected, and such force is transduced into a response signal. This signal actuates a second driving member, and that second driving member is coupled to one of said workpiece or tool for effecting relative movement therebetween to maintain the reference points on the workpiece and tool at predetermined spaced distances from each other during the performance of the work.

3,754,488

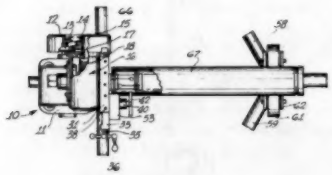
PIPE GROOVING APPARATUS

Yrjo Pajari, Willowdale, Ontario, Canada, assignor to Pajara Instruments, Willowdale, Ontario, Canada

Filed Mar. 27, 1972, Ser. No. 238,550

Int. Cl. B23b *5/16*

U.S. Cl. 82—4 C **7 Claims**



Apparatus is provided for facing the end of a pipe and for grooving the exterior surface of the pipe a fixed predetermined distance from the faced end. A drivable expandable chuck is provided to grip the inner surface of the pipe for rotation thereof and a tool holder micrometrically adjustable axially and transversely of the chuck is adapted to removably receive a facing tool and a grooving tool at a specific separation therebetween.

3,754,489

SMOKELESS CUT-OFF BLADE FOR PLASTIC WRAPPING FILM

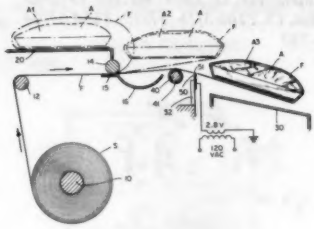
Herbert K. Carver, Jr., Oakford, and Omar Hansen, Jr., Yardley, both of Pa., assignors to J. B. Dove, Inc., Levittown, Pa.

Filed June 2, 1971, Ser. No. 149,255

Int. Cl. B26f *3/12*

U.S. Cl. 83—16 **2 Claims**

In wrapping machinery for wrapping articles in heat-sealable plastic film, such as polyvinylchloride (PVC), a web of film is drawn from a supply roll and is severed by pulling the film under tension downwardly onto the narrow edge of an electrically heated blade to melt the film material along a thin transverse line, and permit severance thereof by pulling, without generating toxic fumes. The blade has sufficient width and sufficient cross-sectional area to store a quantity of heat capable of replenishing instantly the heat lost at the narrow



edge of the blade when the film is contacted and melted, thereby maintaining substantially constant the temperature at the blade edge. The temperature at the blade edge is sufficiently high to melt the film material but not high enough to decompose the film and generate toxic fumes.

3,754,490

HORIZONTAL BAND SAW MACHINE

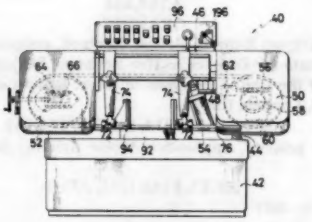
Masao Sata, Sagamihara; Tsuneo Aizawa, Isehara; Kenji Ohnishi, Sagamihara; Shigeo Koizumi, Hatano; Akio Fukuda, Yokohama; Shinki Kikuchi, Sagamihara, and Shichiro Kusanagi, Isehara, all of Japan, assignors to Amada Company Limited, Kanagawa-ken, Japan

Filed July 6, 1971, Ser. No. 159,625

Claims priority, application Japan, Aug. 26, 1970, 45/74262; Aug. 26, 1970, 45/74260; Aug. 26, 1970, 45/74261; Sept. 22, 1970, 45/82580; Dec. 3, 1970, 45/106336; Nov. 21, 1970, 45/102424; Dec. 30, 1970, 45/122787

Int. Cl. B23d *53/00, 55/04*

U.S. Cl. 83—168 **6 Claims**



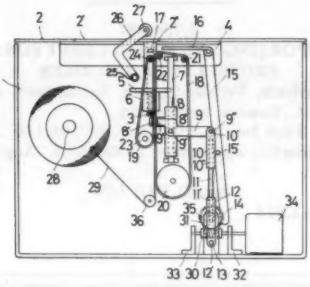
Horizontal-type band saw machine which maintains the band saw blade at a travelling speed selected depending upon the property and shape of the material to be machined, introducing operating fluid of a hydraulic mechanism controlling the raising and lowering of a housing, which accommodates said band saw blade, into a plunger pump at a speed in accordance with the effective weight of the housing, and sending out the thus introduced operating fluid by driving the plunger pump periodically in a cycle corresponding to the travelling speed of the band saw blade. The machine has a mechanism for imparting a predetermined tension to the band saw blade, a safety mechanism for detecting slippage of the band saw blade, a guide mechanism comprising a combination of a specially arranged roller-shaped guide member and a plate-like guide member, a mechanism comprising members for supporting the back of the band saw blade, a mechanism for detecting conditions of the feeding material, a feed roller mechanism, and a mechanism for securely clamping the sawed pieces.

3,754,491

DELIVERY AND CUTTING APPARATUS FOR TAPE

Fumiko Tange, 37-231 Takane, Oaza Okehazama Arimatsu-cho, Midori-ku, Aichi, and Kiichi Isuda, 5-7, 2-chome, Tomigooka, Nara, both of Japan

Filed Oct. 6, 1971, Ser. No. 187,106
Claims priority, application Japan, Feb. 24, 1971, 46/9155
Int. Cl. B26d 5/22
U.S. Cl. 83—277 1 Claim



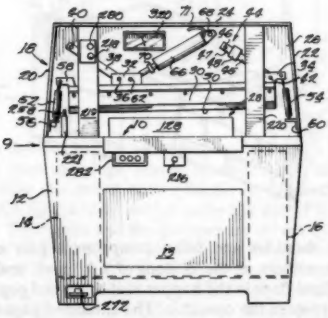
A tape delivery and cutting apparatus for delivering and cutting sealing tape for packaging and the like. The apparatus has a connecting bar movable in a vertical direction by a crank. A swing lever is fulcrumed at its center on a vertically movable cylinder, and has one end connected to the upper end of the connecting bar. A pair of endless tape delivery belts is held between the end of the swing lever and a projection arm on the cylinder for delivering tape. A blade extends from the upper end of a blade arm the lower end of which is actuated by a cam fixed to a crank shaft so that the blade projects horizontally near the space between the upper ends of the delivery belts as the moving cylinder moves upwardly. The pair of delivery belts ceases its delivery action as the moving cylinder is moved downward so that a definite length of tape is automatically delivered.

3,754,492

SHEET CUTTING APPARATUS

Edward William Krauss, Skokie, Ill., assignor to IPEC, Incorporated, Chicago, Ill.

Filed Oct. 7, 1971, Ser. No. 187,424
Int. Cl. B26d 5/42
U.S. Cl. 83—380 7 Claims



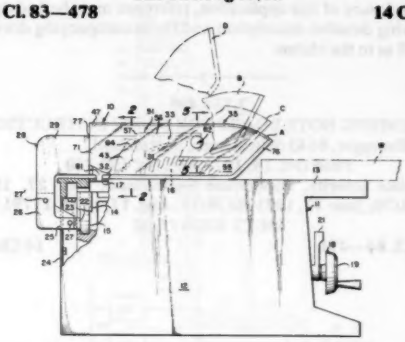
Sheet cutting apparatus powered wholly by hydraulics including a blade for cutting and a hydraulically operated clamping bar for holding the sheet material in place for cutting after clamping has been effected.

3,754,493

CIRCULAR SAW BLADE GUARD

Edward J. Niehaus, and Harry D. Benney, both of Tupelo, Miss., assignors to Rockwell Manufacturing Co., Pittsburgh, Pa.

Filed Dec. 10, 1971, Ser. No. 206,630
Int. Cl. B27g 19/02
U.S. Cl. 83—478 14 Claims



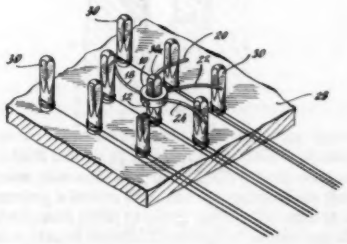
A see through plastic U-shaped circular saw blade guard and kerf splitter assembly wherein the guard is pivotally swingably mounted on the kerf splitter through a relatively short inverted U-shaped link pivoted at one end in straddling relation to the kerf splitter with the web at the one end notched out to dispose the notch end wall to engage the upper edge of the kerf splitter and limit its upward and rearward pivotal movement to maintain the link and guard pivoted at the other end in straddling relation to the link within the upper foreward segment of the pivotal path of the link at all times to assure weight biased movement toward the saw table and guarding position. The kerf splitter is a plate of generally C-shaped configuration having attachment bolt passages in the foreward and rear ends of the lower arm to provide at least one attachment bolt beneath and foreward of the rear end of the table in a relatively inaccessible position when installed to prevent ready removal by the operator. The respective pivot connections include pivot pins fixedly connected to the link and fixedly connected to the guard respectively by end mounted press fitted washers and cap nuts to prevent ready disassembly of the pivot connections and removal of the link or guard. The assembly provides a non-removable safety guard.

3,754,494

PIANO TUNING PIN LOCK

Donald I. Ticehurst, 200 Lake Shore Dr., Brookfield, Conn.

Filed June 20, 1972, Ser. No. 264,537
Int. Cl. G10c 3/10
U.S. Cl. 84—203 8 Claims



A lock for a piano tuning pin comprises a metal collar having a set screw for attachment to a desired pin. A plurality of

heavy spring wire arms extend substantially radially outward from the ring to engage adjacent pins and prevent the selected pin from rotating under the influence of the stressed piano wire.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention. In order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawing as well as to the claims.

3,754,495

SOUNDING NOTE BOARD FOR MUSIC INSTRUCTION

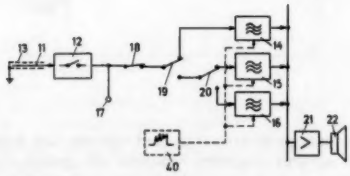
Max Honegger, 8143 Sellenburen, Switzerland

Filed Oct. 18, 1971, Ser. No. 190,160

Claims priority, application Switzerland, Oct. 27, 1970, 15852/70; June 17, 1971, 8838/71; Aug. 11, 1971, 11791/71

Int. Cl. G09b *15/02*

U.S. Cl. 84—471 **14 Claims**



A sounding note board for music instruction is disclosed, comprising conductor bars being arranged below the board surface. The bars are connected with on/off switching means, each of them being arranged to switch a separate sound generator which is assigned to one particular bar. The output terminals of all sound generators are connected with the input of a common amplifier which feeds a speaker. The switching means are designed to form proximity switches, controlled by the respective bars. The proximity switches are operable by a person touching the board surface above the particular bar. The board provided with an ordinary writing layer may comprise an iron or magnetic layer which is arranged at such a distance from the writing surface that attachable magnetic or iron platelets adhere to the writing surface.

3,754,496

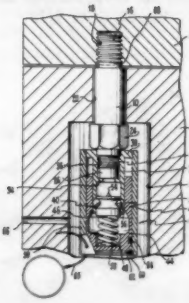
EXPLOSIVE BOLT

Earl A. Noel, Derwood, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1971, Ser. No. 173,534

Int. Cl. F42c *3/00*

U.S. Cl. 89—1 B **1 Claim**



An explosive bolt which is initiated in response to a predetermined hydrostatic pressure including a percussion sensitive bolt filled with explosive having a hydrostatic pressure responsive detonator attached thereto. The detonator includes a plunger having a firing pin attached thereto, the plunger normally being constrained in a retaining sleeve by a ball detent. A piston is slidably positioned over the retaining sleeve and prevents the detent from releasing the plunger until the piston has moved under sufficient hydrostatic pressure. A spring is provided between the plunger and the piston which becomes compressed as the piston moves under pressure thereby providing a forward biasing to the plunger.

3,754,497

TRANSPORTING AND FIRING CHEST FOR SELF-PROPELLED PROJECTILES

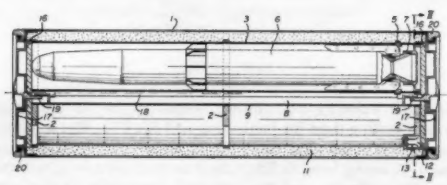
Maurice Rusbach, Vernier-Geneva, Switzerland, assignor to Sarmac S.A., Geneva, Switzerland

Filed July 26, 1971, Ser. No. 166,110

Claims priority, application Switzerland, Aug. 6, 1970, 11825/70

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.814 **1 Claim**



A transporting and firing chest for self-propelled projectiles comprising guide tubes for the projectiles mounted in a support frame and fuses and firing connections for the projectiles. The said frame is rigidly attached to at least one member for fixing the chest to a support, a filling of light semi-rigid material is disposed in the empty spaces between said tubes and between these latter and a tubular external envelope constituting the lateral walls of the chest, so as to insulate mechanically and thermally the support frame and the guide tubes with respect to the external envelope of the chest.

3,754,498

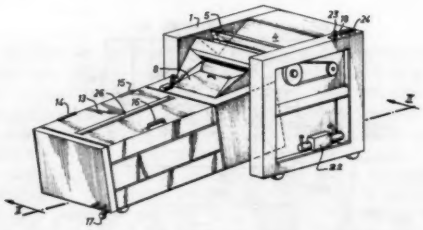
APPARATUS FOR SHREDDING AND BALING PAPER

Roland Gil, 16 Allee Gagarine, 92 Levallois, France

Filed Dec. 17, 1971, Ser. No. 209,147

Int. Cl. B30b *15/08*

U.S. Cl. 100—53 **8 Claims**



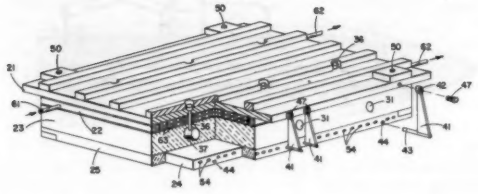
A paper shredder and baler comprises a pair of rotary shredding members at the bottom of a hopper, and a rotor having resilient flaps in the hopper that both feed paper to the rotors and protect the operator. The shredded paper falls by gravity into an inclined baling compartment where a hydraulic jack forces a plate along a downwardly inclined path to compress the shredded paper. Safety controls prevent the shredder and the press from operating simultaneously, and prevent the press from operating until the baling compartment is closed.

3,754,499

HIGH TEMPERATURE PLATENS

Robert M. Heisman, Palos Verdes Peninsula; Charles R. Chase, Long Beach, and Louis A. Weisenberg, Tustin, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 27, 1971, Ser. No. 183,904
Int. Cl. B30b *15/34, 15/06, 15/28*
U.S. Cl. 100—93 P 8 Claims



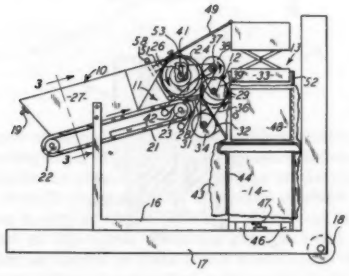
A relatively large platen for a press is disclosed suitable for use up to temperatures of at least 2,500°F. and up to pressures of at least 3,000 per square inch. The platen includes a pressure plate made of a heat conducting ceramic having internal heaters which ceramic is backed up by a ceramic heat insulator and a heat sink, beween the heat insulator and the press, to prevent the press from increasing appreciably in temperature.

3,754,500

LAWN DEBRIS CHOPPER AND COMPACTOR

Sherman C. Heth, Sturtevant, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Feb. 22, 1972, Ser. No. 228,157
Int. Cl. B30b *15/08*
U.S. Cl. 100—97 3 Claims



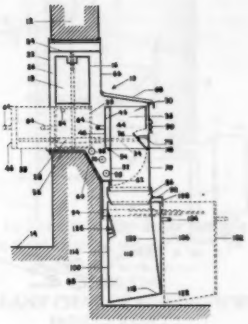
A lawn debris chopper and compactor having a hopper for receiving grass clippings, leaves, tree branches, and the like, and directing the debris onto a feeder in the form of a conveyor and a feeder roller which move the debris to a chopper or cutter. The feeder and the chopper are driven by the motor, and motor controls cut the power to the mechanism when too much debris is being fed in or when the access door to the machine is opened. A compactor is in debris-flow communication with the chopper to receive the cut debris and compress it in a receptacle which is removable from the machine. A motor switch is activated by the presence of the receptacle for operating the entire mechanism, and the entire mechanism is enclosed in a housing and is shown to be supported on a portable chassis.

3,754,501

AUTOMATIC WASTE DISPOSAL APPARATUS

Alexander Horn, 624 Hazelhurst Ave., Merion, Pa.

Filed June 15, 1972, Ser. No. 263,301
Int. Cl. B30b *15/32*
U.S. Cl. 100—99 13 Claims



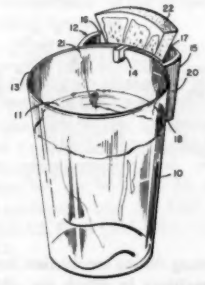
An automatic waste disposal apparatus which includes a compaction unit suitable for mounting within an exterior wall of the building, and having a compactor which is vertically operable within the plane of the wall for trash compaction purposes. A trash receiving container is horizontally slideable beneath the compactor from a loading position wherein the container opens interiorly of the building, to a compaction position which aligns beneath the compactor for trash compaction purposes, to a dumping position wherein the container is moved exteriorly of the building for compacted trash deposit purposes. A closed chute receives the compacted trash from the container and exteriorly leads the waste material to a waste receptacle for disposal purposes.

3,754,502

LEMON SLICE SQUEEZER

Irving Kaufman, Box 732, Sanford, Fla.

Filed Dec. 1, 1971, Ser. No. 203,563
Int. Cl. B30b *9/02, 5/02*
U.S. Cl. 100—133 3 Claims

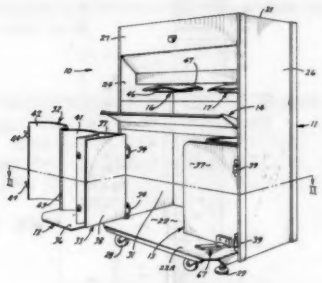


A one-piece disposable lemon slice squeezer apparatus is provided which can be produced of a moldable plastic, or the like. A lemon slice squeezer has a hollow body with an opening for inserting a lemon slice and has protrusions therein for gripping the lemon while pressing against the sides to squeeze a lemon slice placed therein. Openings at the bottom allow the juice to escape into a glass of iced tea, or the like, and a hook on the exterior conveniently allows the lemon slice to be served in the squeezer hooked to the side of the glass.

3,754,503
WASTE COMPACTOR WITH FOOT ACTUATED RELEASE MECHANISM

Ransom J. Hennells, 614 S. Evergreen, Plymouth, Mich.

Filed Mar. 7, 1972, Ser. No. 232,471
Int. Cl. B30b *15/30*
U.S. Cl. 100—229 A 9 Claims

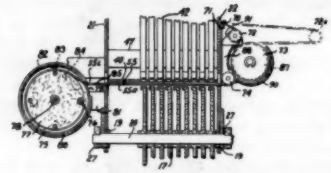


A waste compactor comprising a cabinet having an extendible ram mounted adjacent the upper end thereof and a swingable receptacle positionable below the ram assembly. The receptacle is hingedly mounted on the cabinet for horizontal swinging movement between a filling position directly under the ram, and an emptying position spaced outwardly from the cabinet. The hinges connecting the receptacle to the cabinet permit the receptacle, when in the filling position, to rest directly on the cabinet floor to thus transfer the compacting forces directly onto the cabinet. The hinges also prevent the receptacle from being swingably moved away from its filling position. A foot-actuated release device permits the receptacle, when in the filling position, to be lifted upwardly from the cabinet floor, and also releases the hinges to enable the receptacle to be swingably moved into its emptying position.

3,754,504
MULTI-COLOR RIBBON AND MECHANISM

John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed May 6, 1971, Ser. No. 140,872
Int. Cl. B41k *1/48*
U.S. Cl. 101—336 8 Claims

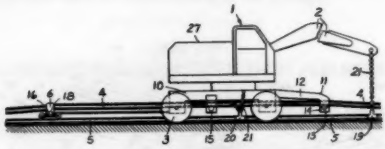


A two color printing ribbon mechanism for adding, calculating or the like machines in which the ribbon has two differently colored sections arranged end-to-end. Normally, a first and most frequently used ribbon section is held in contact with an inking device and the second less frequently used ribbon section is located at the printing line. During a cycle of the machine in which the first section is to be used for imprinting, and prior to the printing operation, the ribbon is moved endwise to locate the first section at the printing line and to move the second section into contact with a second and appropriately colored inking device. During a cycle in which the second section is to be used for imprinting, the ribbon moving mechanism is merely disabled, leaving the second ribbon section at the printing line during the printing operation.

3,754,505
METHOD AND APPARATUS FOR REPLACING A PAIR OF RAILS

Helmut Dyballa, 4713 Bockum-Hovel, Goorweg, Germany

Filed Nov. 19, 1971, Ser. No. 200,390
Claims priority, application Germany, Nov. 23, 1970, P 20 57 487.2
Int. Cl. E01b *29/16*
U.S. Cl. 104—5 10 Claims

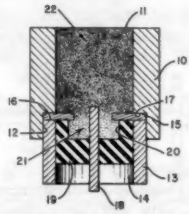


A method and apparatus for continuously replacing rails is provided in which the old rails are raised by guides on an advancing vehicle passed along the vehicle and laid in the bed within the railway gauge. Simultaneously new rails previously placed within the gauge are guided into position.

3,754,506
SPARK GAP DETONATOR

Robert Parker, Danville, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 7, 1971, Ser. No. 141,122
Int. Cl. F42b *3/14*
U.S. Cl. 102—28 R 7 Claims

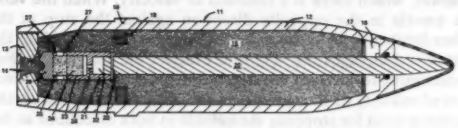


An improved spark gap detonator having a central electrode and surrounding annular electrode which project into a recess formed in one end of the detonator cavity. When explosive powder is pressed into the cavity, the powder flowing past the projecting annular electrode experiences an abrupt pressure drop such that the powder filling the recess packs at a lower density than the powder in the rest of the detonator cavity. This allows the detonator to be filled with only a single powder pressing, while providing a relatively low density powder, which is easier to detonate, adjacent the electrodes, and whereby the electrode configuration has a lower inductance, resulting in a shorter rise time of the firing voltage and hence improved timing of detonation.

3,754,507
PENETRATOR PROJECTILE

Robert B. Dillinger, and Howard H. Payne, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 30, 1972, Ser. No. 257,559
Int. Cl. F42b *11/14*, *13/04*
U.S. Cl. 102—52 3 Claims

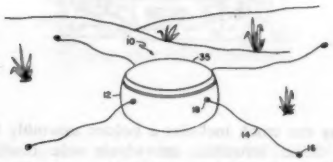


A projectile in which a combination of interior elements, including a penetrator, a pyrotechnic delay column and an ignition charge are utilized to ignite a viscous uncured propellant after the projectile has been fired. The thus ignited propellant increases the velocity and effectiveness of the projectile.

3,754,508
SENSOR EMPLOYING A RESISTANCE VARIATION DETECTING SYSTEM

Michael S. Dalton, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed Apr. 5, 1971, Ser. No. 131,219
Int. Cl. F42b *73/00*; F42c *7/02*, *11/00*
U.S. Cl. 102—70.2 R 22 Claims



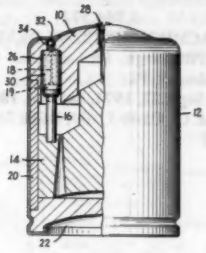
A sensor employing a resistance variation detecting system for detecting rapid changes in the resistance between two or more electrodes placed upon the surface of the earth is disclosed. Ground engaging sense electrodes establish an initial condition having an ohmic resistance relative to the ground. The value of this ohmic resistance changes when the sense electrodes are moved to make better contact with the surface of the earth. Means are provided to detect the rapid change in the ohmic resistance and enable suitable utilization means.

3,754,509
ANTI-PERSONNEL BULLET FOR RIOT CONTROL

Ridvan I. Gogen, 229 Cathedral Ave., Hempstead, N.Y.

Filed June 19, 1972, Ser. No. 263,875
Int. Cl. F42b *11/30*
U.S. Cl. 102—92 10 Claims

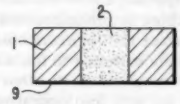
A hard-nosed bullet for mounting on a charged cartridge for use in a firearm is provided having a housing into which an injection plunger is slidably mounted. A plurality of injection pistons are mounted on the plunger, each of which is adapted to slide into one of a plurality of passages within the bullet head. Into each of the passages a sterile capsule containing a flexible injection needle and a fluid is inserted. Upon impact with a target the plunger moves forward, pushing the pistons through the passages, thereby rupturing the capsule and forcing the needles to penetrate the outer surface of the bullet, thus injecting the fluid into the target.



3,754,510
PROPELLANT CHARGE FOR DEVICES USED INDUSTRIALLY

Gunther Marondel, Erlangen; Heinz Gawlick, Furth, and Werner Siegelin, Stein, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Oct. 31, 1969, Ser. No. 872,809
Claims priority, application Germany, Oct. 26, 1968, P 18 05 359.3
Int. Cl. F42b *1/00*
U.S. Cl. 102—101 9 Claims

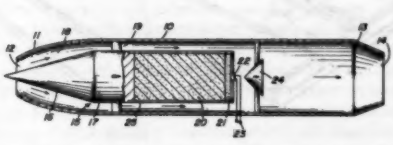


The present disclosure is directed to a propellant charge for industrial use which comprises a body of a propellant powder having a centrally disposed recess extending therethrough, said recess containing a percussion sensitive primer substance, said primer substance being housed in the recess in such a manner that the compacting of the primer substance remains below the value required for the ignition thereof upon a sudden unexpected compression of the propellant charge in the direction of the axis of the recess.

3,754,511
FUEL AND FUEL IGNITER FOR RAM JET AND ROCKET

Glenn H. Damon, Pittsburgh; John Ribovich, McKeesport, and Joseph A. Herickes, Pittsburgh, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 478,949, Dec. 30, 1954, Pat. No. 2,895,788. This application Mar. 26, 1959, Ser. No. 802,260
Int. Cl. F42b *1/00*; F02k *7/08*
U.S. Cl. 102—102 2 Claims



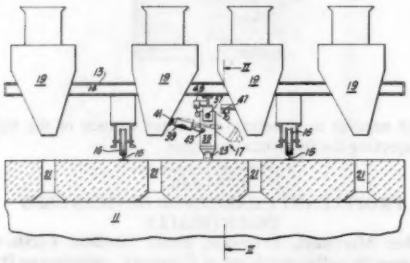
1. A fuel unit for forced air flow ram jet combustion chambers comprising a briquet of compressed mixed powdered oxidants and reductants, a magnesium shell encasing said briquet, and a film of plasticized nitrocellulose consisting of 25 percent

by weight of alcohol-wet nitrocellulose in 75 percent by weight of Dibutyl-phthallate between the briquet and shell.

3,754,512
MACHINE SPOTTING DEVICE

Andrew Kmety, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sept. 22, 1971, Ser. No. 182,663
Int. Cl. C10b *31/04;* **B61k** *7/00*
U.S. Cl. 104—249 **5 Claims**

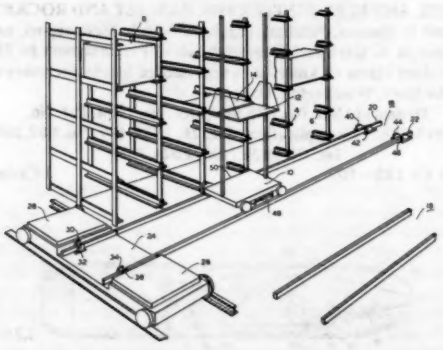


A machine spotting device for accurately positioning a machine traveling over rails with respect to a preselected position along the rails comprises a plurality of indexing surfaces that are remote from and run along the length of the rails with an indexing surface corresponding to each position to which the machine is to be spotted, a conventional indexing cylinder for moving the machine a predetermined spaced distance from the indexing surface to the preselected position, an arm having one end pivotally mounted to the machine and having the indexing cylinder mounted to its other end, and another cylinder for moving the arm into operative association with the indexing surfaces.

3,754,513
SHOCK ABSORBING STOP FOR FIXED PATH VEHICLE

James H. Snyder, and William E. Riedner, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 8, 1971, Ser. No. 206,223
Int. Cl. B61k *7/18;* **B61g** *11/12*
U.S. Cl. 104—256 **8 Claims**



This is apparatus for positive stopping of a fixed path vehicle with a minimum of shock. The fixed path vehicle carries a pair of floating fluid type shock absorbers which are so located as to engage pairs of positive stops at each limit of travel of the vehicle to transmit a stopping force to the vehicle which is a function of vehicle velocity. The fluid shock absorbers are of the cylinder double-ended piston type in which restricted flow of fluid is permitted between the cavities on each side of the piston. The shock absorbing mechanism has a spring between the piston and cylinder biasing the piston into the extended position against fixed brackets on the vehicle. Fixed stops are mounted in the floor to limit the travel of the vehicle in each direction. When the vehicle travels in one direction into the stops, the piston end of the shock absorbing mechanism engages the stops while the cylinder end engages a bracket on the vehicle thereby transmitting force from the stop to the bracket, which force is a function of velocity. When the vehicle travels in the opposite direction against the stop at the other limit of travel, the cylinder engages the stop while the piston rod engages the opposite bracket on the vehicle thus transmitting force from the stop to the bracket which is a function of velocity of the vehicle. In this way, the same shock absorber is used for stopping the vehicle in both directions at the limit of travel. A pair of the shock absorbers may be mounted equidistant from the center of mass of the vehicle to exert the stopping force without excessive torque about an axis normal to the direction of travel of the vehicle.

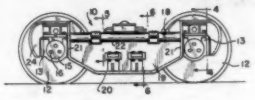
ERRATUM

For Class 104—5 see:
Patent No. 3,754,505

3,754,514
LATERAL MOTION RAILWAY CAR TRUCK

William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 19, 1971, Ser. No. 190,505
Int. Cl. B61f *5/06, 5/14, 5/30*
U.S. Cl. 105—171 **2 Claims**



A railway car truck includes a bolster assembly having a transverse beam structure on which side bearings are mounted. The assembly further includes a pair of leaf springs which extend transversely with the beam and have their ends connected to the side frames of the truck. The side frames include means for permitting pivotal movement of the leaf spring assemblies during lateral swinging movement of the side frames. The side frames include depending webs and upwardly extending flanges at opposite ends of the web which support outwardly longitudinally projecting hinge plates which support the side frame on journal boxes carried at the ends of wheel axles. The journal boxes include a pivot saddle within which the pivot plates are supported. Upwardly extending stop plates connected to the journal boxes include rubber type biscuits which engage the pivot plates and resiliently bias the same against lateral swinging movement.

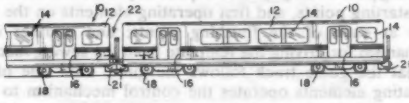
3,754,515
CONNECTION PASSAGE BETWEEN RAILWAY PASSENGER CARS

William Van Der Sluys, Crown Point, Ind., and Thomas J. O'Neill, Evergreen Park, Ill., assignors to Pullman Corporation, Chicago, Ill.

Filed Dec. 27, 1971, Ser. No. 212,099
Int. Cl. B60d *5/00;* **B61d** *17/20, 49/00*
U.S. Cl. 105—8 **4 Claims**

A safety gate connecting passage structure positioned at the end sill area of a railway passenger commuter vehicle and in-

cluding a pair of spaced vertically extending face plate members aligned with a pair of similarly disposed face plate mem-



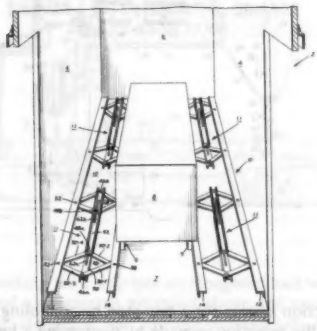
bers on the adjoining passenger vehicle to thereby channel and direct passengers in their movement between cars.

3,754,516

PARALLEL MOTION MECHANISM

James J. Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.

Filed Dec. 23, 1970, Ser. No. 100,865
Int. Cl. B61d *45/00*; B60p *7/14*
U.S. Cl. 105—369 B **26 Claims**



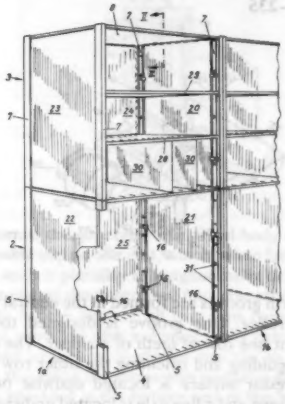
A parallel motion mechanism particularly suited for use as an adjustable retainer for blocking and bracing loads in cargo-carrying vehicles, such as railroad cars, semi-trailers, ships, airplanes and containers. The mechanism in its basic form comprises a pair of elongated, rigid members which are relatively laterally movable between a collapsed position and an extended position, and a connecting linkage which at all times maintains the members in parallel relationship. The connecting linkage comprises a pair of longitudinally spaced-apart toggle linkages each comprising four equal-length links having their ends pivotally connected to form a parallelogram, two opposite pivot points of the parallelogram being respectively pivotally connected to the two members. A guiding linkage is provided comprising a pair of elongated guide elements respectively extending between and pivotally connected to corresponding ones of the remaining pivot points of the two toggle linkages and being guided for relative collinear extension and retraction in response to movement of the toggle linkages between collapsed and the extended positions thereby maintaining the two members in parallel relationship. In one embodiment, the two guide elements may be clamped together in any position of the mechanism between fully collapsed and fully expanded thereby locking the mechanism so as rigidly to block and brace a load within a vehicle. In another embodiment, the two members may be resiliently urged toward their expanded position thereby resiliently to brace a load within a vehicle.

3,754,517

SHELVING

Ernst Hassel, Neunkirchen Salchendorf, and Adolf Schmenn, Burbach-Niederdresselndorf, both of Germany, assignors to Fritz Schafer, GmbH, Neunkirchen Kreis Siegen, Germany

Filed July 19, 1971, Ser. No. 163,625
Claims priority, application Germany, July 22, 1970, P 70 27 532.0
Int. Cl. A47b *57/00*
U.S. Cl. 108—61 **7 Claims**



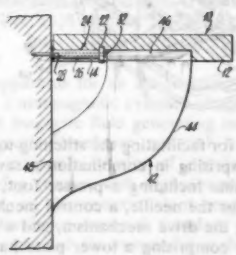
Shelving consists of at least two juxtaposed shelf units which include frame members, such as vertical posts, of metal profiled sections, together with floor and/or roof members. The shelf units are connected by sheet metal clips whose ends are bent over to engage wedge-shaped converging edges on the sections or floors or roofs, each clip being formed with a bead extending transversely across the clip and projecting on the opposite side to the bent-over ends. The bead is offset from the centre of the clip so that it lies wholly within one of the two shelf units connected by the clip, leaving the other unit clear for accommodating a common side wall extending to the frame members and the roof of the unit. Identical clips are used to connect the posts, which have a G-shaped cross-section, with vertical walls having U-section flanged edges. A rear wall with cranked edges can also be slotted into the apertures in the G-section posts.

3,754,518

RAPID MOUNTING SHELF

Samuel Joseph Wachtel, 27 Valley Ln. West, N. Woodmere, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,070
Int. Cl. A47b *5/00*
U.S. Cl. 108—152 **5 Claims**



A shelf is adapted for rapid and easy mounting. The shelf platform has a contoured opening formed in its underside, into which is fit a member securable to a wall. After the member is

secured to the wall, it is inserted into that contoured opening securing the shelf to the wall. A bracket can be attached to the underside of the shelf platform to more evenly distribute the shelf load.

3,754,519

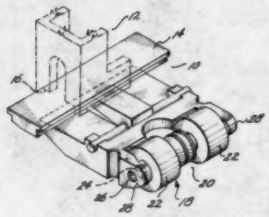
PRESSER FOOT ROLLER WITH ALIGNMENT FEATURE

Robert B. Howell, 3132 Rocky Point Rd., Bremerton, Wash.

Filed Aug. 25, 1971, Ser. No. 174,882

Int. Cl. D05b *29/00*

U.S. Cl. 112—235 **10 Claims**



A pair of girth grooves are formed in the central portion of a presser foot roller. One groove is designed to guide and properly orient one row of teeth of a zipper. The other guide groove is for guiding and orienting the other row of teeth. A cylindrical presser surface is located endwise outwardly of each guide groove and a live axle is located endwise outwardly of each presser surface. A third girth groove is formed between the two guide grooves. This third girth groove has a transverse curvature closely matching the transverse curvature of a needle. The spacing between this needle groove and each zipper tooth guide groove axially of the roller is such that the sewing path established by the needle is properly spaced with respect to either row of zipper teeth passing through its guide groove during the sewing operation.

3,754,520

MATERIAL STITCHING APPARATUS

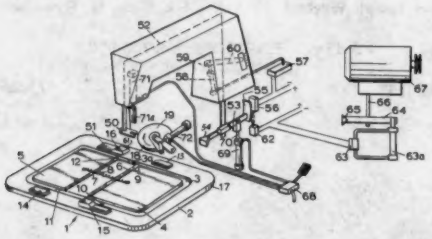
Michael Newstead Bennison, Leeds, England, assignor to W. J. Clarkson Limited, Yorkshire, England

Filed Oct. 26, 1971, Ser. No. 192,668

Claims priority, application Great Britain, Oct. 29, 1970, 51,443/70

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.12 **10 Claims**



Apparatus for facilitating the stitching together of layers of material comprising in combination a sewing machine, the sewing machine including a presser foot, a needle, a drive mechanism for the needle, a control mechanism for starting and stopping the drive mechanism, and a guide; a template, the template comprising a lower plate having a continuous guide track engageable by the guide, first and second top plates, an element pivotally mounting the first and second top plates to the lower plate to be closable over a respective part of the lower plate to hold material to be stitched, the guide track having first starting and finishing points for a stitching operation on material held by the first top plate and second starting and finishing points for a stitching operation on material held by the second top plate, the first and second finishing points being spaced respectively from the second and first starting points, and first operating elements on the template at each of the finishing points; and another drive mechanism for driving the template from the sewing machine so that the guide track follows the guide until one of the operating elements operates the control mechanism to stop the drive mechanism with the needle of the sewing machine at the respective one of the finishing points.

3,754,521

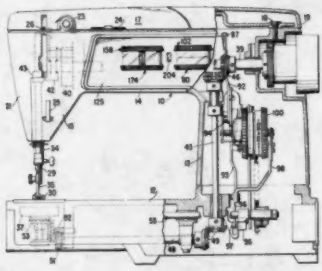
TWO-STEP BUTTONHOLE MECHANISM SELECTIONS SYSTEM

Norbert Thuring, Grotzingen, Germany, assignor to The Singer Co., New York, N.Y.

Filed July 21, 1972, Ser. No. 273,894

Int. Cl. D05b *3/02*

U.S. Cl. 112—158 B **3 Claims**



A selection system for a two-step buttonholing mechanism in which the selection is made by depressing a knob into one of two selectable positions. An intricate track defining a closed loop is affixed to the knob, and, a cam follower on the end of a resilient member substantially rigid in the direction of knob movement but flexible transversely thereof is deflected by the intricate track. The two selectable positions of the knob are defined by detent positions in the closed loop intricate track, the knob being held in a selected position by the resilient member in one of the detent positions. An indication flag, having two indicia thereon spaced from each other, the indicia being representative of the steps of the buttonhole, is connected with the knob so as to present that indicia to view corresponding to the step of the buttonhole selected.

3,754,522

WORK PIECE SENSOR AND TAPE CUTOFF FOR SEWING MACHINES

Roy E. Miller, 1301 Stuart Dr., Mechanicsburg, Pa., and Robert F. Miller, 128 W. Clearview Dr., Camp Hill, Pa.

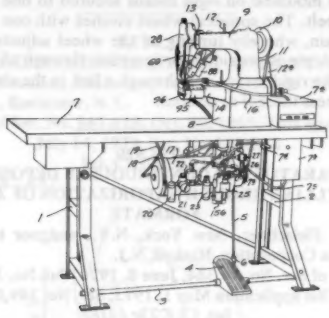
Division of Ser. No. 695,812, Oct. 31, 1967, Pat. No. 3,425,373, which is a continuation-in-part of Ser. No. 504,396, Oct. 24, 1965, abandoned. This application Oct. 22, 1968, Ser. No. 769,512

Int. Cl. D05b *69/22*

U.S. Cl. 112—219 B **1 Claim**

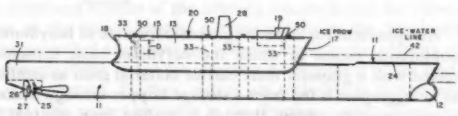
The present machine is for affixing binding tapes to articles and including attachments for such machines which allow the machine to be run either manually or automatically. In the automatic position of the attachments, they start the machine, upon presentation of a work piece to the machine, cut the tape

at the start and finish of the work and stop the machine automatically. Also the operator can run the machine manually



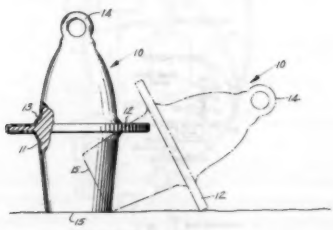
and stop the machine at any time when running the machine in said automatic position of the attachments.

3,754,523
ICEBREAKING TANK SHIP
Walter B. Devine, Houston, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.
Filed Nov. 19, 1971, Ser. No. 200,307
Int. Cl. B63b *35/08*
U.S. Cl. 114—40 **1 Claim**



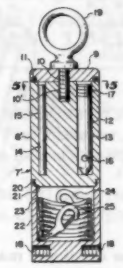
An icebreaking tank ship has an elongated hull with a bow and stern and a catamaran arranged above and connected to the hull, the elongated hull moving substantially under the icepack while the twin hulls of the catamaran are arranged to cut through the icepack, the bridge of the catamaran being spaced above the icepack.

3,754,524
BOAT ANCHOR
Clarence T. Locks, 259 E. Arion St., West Saint Paul, Minn.
Filed Jan. 5, 1972, Ser. No. 215,473
Int. Cl. B63b *21/30*
U.S. Cl. 114—206 R **2 Claims**



An anchor device for small boats. This device consists primarily of a plastic dipped cast iron body which includes a flange that will grip on the bottom immediately following the dropping of the main body.

3,754,525
PORTABLE ANCHOR UNIT
Allen J. Leighty, 634 Rome Ave., Rockford, Ill.
Filed Jan. 20, 1972, Ser. No. 219,446
Int. Cl. B63b *21/30*
U.S. Cl. 114—206 R **9 Claims**



In both forms, the generally cylindrical body of the anchor has a removable cap on one end, which, when fastened securely in place, seals a plurality of longitudinally extending bores in which are placed the unscrewed four pins serving as ground gripping legs for the anchor, all four pins being threaded at one end and provided with a diametrically extending hole in the other end to receive a smaller size pin to be used as a cross-bar in threading the larger pins one after another in four radial holes provided in the bottom end of the body at 90° intervals, the cross-pin when not in use being stored in a fifth hole provided in the body. In another form, a hollow cylindrical container is threaded for connection with the externally threaded reduced lower end of the body and is adapted to form a smooth extension of the body when in use and serves to house a coiled length of rope used for connecting the anchor to the boat, a snap fastener on one end of the rope attaching to the eye on the eyebolt that fastens the cap onto the body of the anchor, and the other snap fastener on the other end of the rope attaching to a suitable eye provided on the boat. In this latter form, the pins forming the legs thread into radial holes provided in the lower end of the container and hance they are adapted to serve in the tightening and loosening of the container.

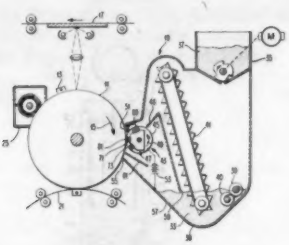
ERRATUM

For Class 117—51.14 see:
Patent No. 3,754,527

3,754,526
ELECTROPHOTOGRAPHIC DEVELOPMENT APPARATUS
Allison Holland Caudill, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1971, Ser. No. 209,039
Int. Cl. G03g *1/300*
U.S. Cl. 118—637 **5 Claims**

A developing apparatus for an electrostatic reproduction machine includes a nonmagnetic cylinder rotatably mounted relative to a fixed magnetic field generating means. A multicomponent magnetic developer material is fed to the cylinder forming magnetic bristles of developer material thereon for brushing contact with a photosensitive electrostatic plate bearing an electrostatic latent image thereon. A portion of the developer material transfers to the plate developing the image, and the remainder is slung from the rotating cylinder onto a guide member thereby providing marked agitation and recombination of the developer material resulting in an increased triboelectric charge level of the developer material. The magnetic field is oriented to facilitate

the slinging of the developer material against the guide. It further provides a directional field following the delivery point of the developer material to the cylinder which prevents developer material from flowing over the outer edges of the magnetic field existing at the development zone and post



development zone. The developer material is thus prevented from being attracted to the cylinder at the development zone and thereafter prematurely slung from the rotating cylinder thereby keeping unwanted developer material from being carried away from the developer unit by the plate.

3,754,527

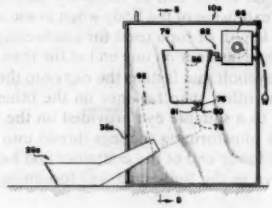
ANIMAL FEEDER

Chester W. Jenkins, Ten Southfield Dr., Rolling Hills, Calif.

Continuation-in-part of Ser. No. 856,972, Sept. 11, 1969. This application Sept. 13, 1971, Ser. No. 179,868

Int. Cl. A01k *5/02*

U.S. Cl. 119—51.14 **7 Claims**



An apparatus for automatically feeding animals at a predetermined time is provided and includes at least one container for holding animal food and means for dumping the container at a predetermined time to cause the contents thereof to be discharged by gravity at a location accessible to the animal.

3,754,528

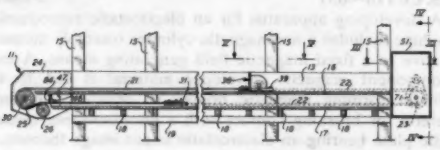
DEVICE FOR FEEDING ANIMALS

James H. Downing, Mineral, Va., assignor to Harris Company, Inc.,, Mineral, Va.

Filed Jan. 28, 1971, Ser. No. 110,538

Int. Cl. A01k *05/02*

U.S. Cl. 119—52 AF **2 Claims**



An apparatus for feeding animals including a positive simple chain drive unit, to move a belt or carpet to carry animal feed forward in a feed bunk, or backward to clean and reload, unlimited takeup means being provided to tighten or take up slack in the drive chain, eliminating all cables, winch drums, clutches, solenoids and some other parts formerly used. The takeup means includes a sprocket wheel secured to a shaft rotatably mounted on rigid means secured to one end of the moving belt. The sprocket wheel meshes with one end of the drive chain, whereby turning of the wheel adjusts the chain tension. A pin is provided for insertion through aligned apertures in the rigid means and through a link in the chain to hold the tightness thereof as desired.

3,754,529

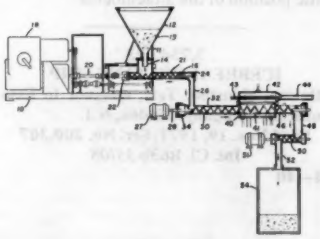
APPARATUS FOR CONTINUOUSLY DEPOSITING BERYLLIA THROUGH VAPORIZATION OF A BASIC FORMATE

Peter L. Fleischner, New York, N.Y., assignor to National Beryllia Corporation, Haskell, N.J.

Division of Ser. No. 44,344, June 8, 1970, Pat. No. 3,679,463. This application May 1, 1972, Ser. No. 249,054

Int. Cl. C23c *13/12*

U.S. Cl. 118—48 **7 Claims**



An apparatus for vaporizing a basic formate of beryllium by continuous means in which the beryllium basic formate is mixed with a granular inert carrier material such as sand and as an aggregate is fed from a storage hopper through a closed screw conveyor system through a heating zone whereat the basic formate of beryllium is vaporized and in a vaporized condition is delivered to a chamber in which the beryllium basic formate is thermally decomposed into beryllia and is deposited on a substrate. The granular inert material and unvaporized basic formate is discharged to a closed receiving hopper for reprocessing and the like.

3,754,530

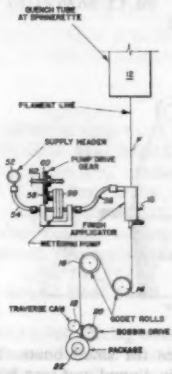
FINISH APPLICATOR FOR FILAMENT BUNDLES

John H. Pierce, Charlotte, N.C., assignor to R. H. Bouligny, Inc., Charlotte, N.C.

Filed May 4, 1972, Ser. No. 250,234

Int. Cl. B05c *3/12*

U.S. Cl. 118—420 **6 Claims**



Apparatus for applying liquid finish to a traveling filament bundle is provided in which the filament bundle is surrounded

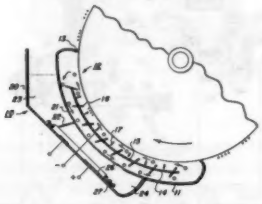
during finish application for better control and uniformity of application, while threading of the apparatus is readily allowed as well as disassembly of the components for cleaning.

3,754,531

FLUIDIZED DEVELOPMENT APPARATUS

Daniel J. Donalies, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 867,618, Oct. 20, 1969. This application July 14, 1971, Ser. No. 162,362
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **1 Claim**



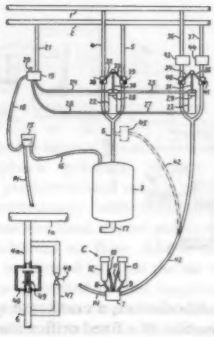
An apparatus for developing a latent electrostatic image wherein the developer material is circulated in a fluidized state past the image. The developer is fluidized by an orbiting member which further acts as a biased development electrode to better develop the electrostatic image. The fluidized developer flow moves in the direction of movement of the surface bearing the electrostatic image to be developed whereby the combined motion of the orbiting electrode and the movement of the image bearing surface results in the developer being propelled at an average velocity equal to the velocity of movement of the image for effective development of the leading edge thereof. Further, means are included to optimumly tonerize the carrier particles in the developer while being circulated for development.

3,754,532

MILKING MACHINE

Bengt Erik-Mikael Troberg, Tumba, and Carl Olof Claesson, Uppsala, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Continuation-in-part of Ser. No. 878,294, Nov. 20, 1969, abandoned. This application June 9, 1971, Ser. No. 151,371
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.08 **6 Claims**



A milk flow indicator is inserted in the pipeline through which the liners of the teat cups deliver milk to a vessel maintained under vacuum; and control means are operatively connected to this indicator for varying the vacuum in the vessel in response to changes in the milk flow in the pipeline, the control means acting to reduce the vacuum in response to substantial cessation of the milk flow. Preferably, the flow indicator is also arranged to vary a characteristic of the pulsations to which the teat cups are subjected by the pulsator means, such as the frequency of the pulsations and/or the ratio between the massage and suction periods of the pulsations.

ERRATUM

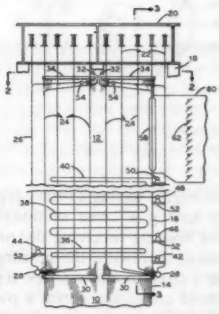
For Class 119—52 AF see:
Patent No. 3,754,528

3,754,533

TUBE SUPPORT SYSTEM

Karl Franzmann, and Paul Schleuter, both of Oberhausen, Germany, assignors to Babcock & Wilcox Limited, London, England

Filed Nov. 24, 1971, Ser. No. 201,905
Int. Cl. F22b *37/24*
U.S. Cl. 122—510 **2 Claims**



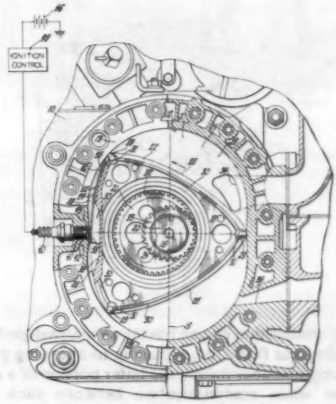
A vapor generating apparatus having an evaporator section, a portion thereof including the wall tubes forming an upright gas passage and the support tubes supporting the heat exchanger surface suspended within said gas passage.

3,754,534

ROTARY COMBUSTION ENGINE IGNITION

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1971, Ser. No. 211,429
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.09 **29 Claims**



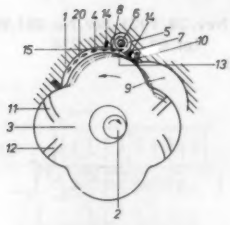
A rotary combustion engine having a spark plug cooperating with a plurality of series arranged electrodes to provide a

plurality of sparks in each of a plurality of variable volume working chambers for fuel ignition.

3,754,535
COMBUSTION ENGINE WITH ROTARY PISTON ARRANGEMENT

Peter Hofbauer, Wolfsburg, Germany, assignor to Volkswagenwerk AG, Wolfsburg, Germany

Filed Oct. 6, 1971, Ser. No. 186,914
Claims priority, application Germany, Oct. 10, 1970, P 20 49 882.2
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.13 **14 Claims**

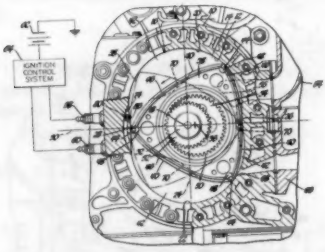


In a combustion engine having a rotary-type piston mounted for rotation and having a cross sectional area defining a trochoid, an outer housing receiving the piston and being in meshing engagement therewith, the housing having an inner surface which has a cross sectional shape representing the envelope of a trochoid curve and forms a plurality of housing arches which include the combustion chambers in the form of recesses, each chamber being arranged to fall in the half of a housing arch which is first swept by the piston during the relative movement between the housing and the piston.

3,754,536
ROTARY COMBUSTION ENGINE

James D. Fleming, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 4, 1972, Ser. No. 250,317
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **3 Claims**

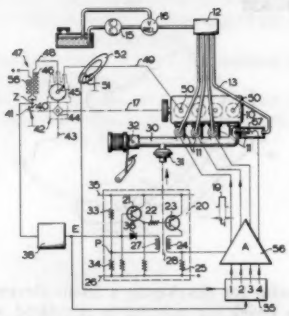


A rotary combustion engine having an internal gas flow control providing gas flow from a trailing to a leading portion of each working chamber during the latter portion of a compression phase when communication between such portions becomes substantially limited between the stator housing's peripheral wall and the rotor face and the gas flow control in addition preventing back flow from a leading chamber to a trailing chamber.

3,754,537
FUEL INJECTION SYSTEM ESPECIALLY FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

Wolf Wessel, Schwieberdingen, and Josef Wahl, Stuttgart, both of Germany, assignors to Robert Bosch, GmbH, Gerlingen-Schillerhone, Germany

Filed Mar. 3, 1972, Ser. No. 231,500
Claims priority, application Germany, Mar. 12, 1971, P 21 11 814.9
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **7 Claims**

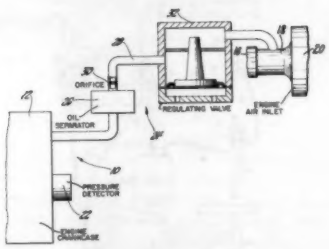


To provide proper allocation of fuel injected under electronic control, a sequence of electrical pulses, controlled by rotation of the engine are provided, the passage opening electromagnetic valves through which fuel can be injected. A signalling circuit which is inductively or capacitively coupled to an ignition wire provides a signal synchronized with ignition pulses, this signal being coupled to an electronic counter which steps in synchronism with the ignition pulses and the output counts of which control application of the valve pulses to the respective fuel injection valve associated with the cylinders of the internal combustion engine.

3,754,538
ENGINE CRANKCASE VENTILATION

Max Ephraim, Jr., Evergreen Park, and Ludvik F. Koci, LaGrange Park, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1971, Ser. No. 194,930
Int. Cl. F02f *9/02*
U.S. Cl. 123—41.86 **4 Claims**



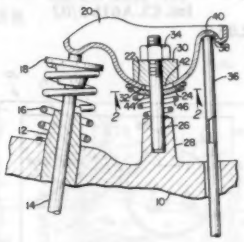
In a preferred embodiment, a crankcase ventilation system utilizes the combination of a fixed orifice and a pressure actuated regulating valve downstream of the orifice to control vapor flow from the engine crankcase into its induction system. The arrangement provides controlled vacuum in the engine crankcase during normal operation but permits the development of pressure during abnormal conditions of excessive blowby or the like so as to permit actuation of a crankcase pressure actuated shutdown device associated with the engine.

3,754,539

ENGINE ROCKER ARM STABILIZER

John C. Bandimere, 3276 Benton, Denver, Colo.

Filed June 29, 1972, Ser. No. 267,583
Int. Cl. F01l 1/16, 1/18
U.S. Cl. 123—90.41 7 Claims



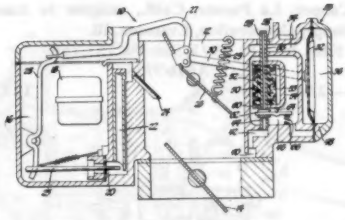
Device for use with a conventional engine rocker arm of the type pivoted between its ends by a spherical wall on the rocker arm, supported by a ball support on the engine, characterized by a spring urged member engaging the spherical wall, and maintaining it in stablized engagement with the ball support.

3,754,540

SPEED LIMITING MEANS FOR AN AIR VALVE CARBURETOR

Francis L. Bedard, Troy, and Robert T. Price, Berkley, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,283
Int. Cl. F02d 11/08
U.S. Cl. 123—103 3 Claims



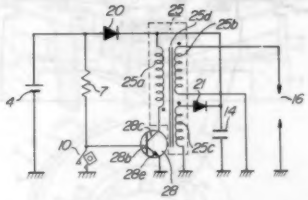
An air valve upstream of a manually-controlled throttle valve, both pivotally disposed in a mixing conduit of an air valve carburetor, is linked to fuel metering means and also to a spring that biases the air valve to a normally closed position. The air valve is opened by a diaphragm-type fluid motor having a first pressure chamber communicating with a vacuum port intermediate the air valve and throttle valve through a vacuum passage and a second pressure chamber communicating with atmospheric pressure through an atmospheric passage. Below a predetermined vehicle speed, both chambers communicate continuously with their respective pressures with the result that the fluid motor positions the air valve in relation to the inducted air flow. Above this predetermined speed, the spring is allowed to close the air valve to a position where the air flow is limited to that required to maintain the predetermined speed. The rate of air valve closure is controlled by cooperation between the fluid motor and a solenoid valve intermittently operated by a vehicle speed sensor for duty cycles increasing as the actual vehicle speed exceeds the predetermined speed. The solenoid valve connects the first pressure chamber alternately between the atmospheric and vacuum passages for durations sufficient to effect a pressure increase in the pressure chamber that allows closure of the air valve at a rate to limit the vehicle speed.

3,754,541

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1970, Ser. No. 85,554
Claims priority, application Japan, Nov. 4, 1969, 44/87568; Jan. 26, 1970, 45/6295
Int. Cl. F02p 3/06
U.S. Cl. 123—148 E 2 Claims



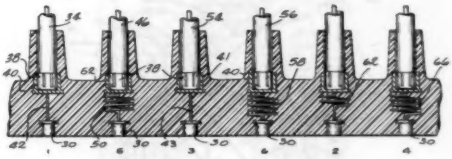
An ignition system for internal combustion engines wherein an ignition coil is provided, in addition to a first winding having a switching element in series and a second winding provided a discharging gap in series, with a third winding magnetically coupled with the first and second windings, a capacitor which is connected across the terminals of the third winding by way of a rectifier has the relation of a parallel connection with a series circuit of the first winding and the switching element, and the series circuit is energized by a power source having a reverse current blocking element, whereby the capacitor is charged by the power source by way of the first and third windings and at the same time the capacitor is discharged, when desired, through the first winding to produce a high voltage across the terminals of the second winding.

3,754,542

ENGINE IGNITION CIRCUIT WITH UNIFORM LEADS

Kenneth A. Allen, 3912 Douglas Ave., Racine, Wis.

Continuation-in-part of Ser. No. 1,618, Jan. 9, 1970, abandoned. This application Dec. 15, 1971, Ser. No. 208,369
Int. Cl. F02p 9/00
U.S. Cl. 123—148 A 1 Claim



In an internal combustion engine having cylinders in line, the leads from the distributor to the spark plugs of all cylinders are measured and equalized in length of current travel by means of compensating coils preferably embedded in the distributor cap.

3,754,543

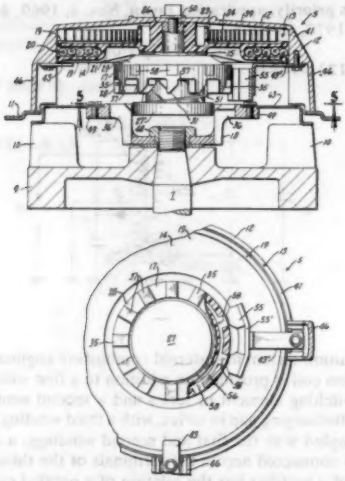
ROPE STARTER FOR SMALL ENGINES

Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 10, 1972, Ser. No. 233,544
Int. Cl. F02n 3/02
U.S. Cl. 123—185 B 3 Claims

A rope rewind pulley, concentric with an engine crankshaft, has a hub portion comprising a male helical spline member. A driving clutch element comprising a female helical spline is

mounted on said hub portion for limited axial motion therealong upon relative rotation, and then, upon engaging a driven clutch element concentrically fixed to the crankshaft, for rotation with the pulley part. The pulley part and driving



clutch element are of plastic and are carried either on the crankshaft or on a stub shaft fixed to a recoil spring housing. Cooperating fixed and movable magnet members are provided to inhibit rotation of the driving clutch element to cause it to move axially upon initial rotation of the hub portion.

3,754,544

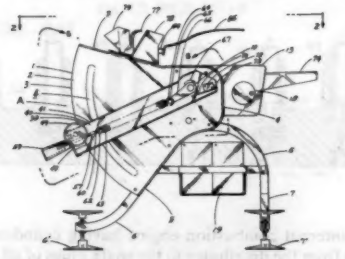
SPRING OPERATED BALL PITCHING DEVICE

Harold Glaser, St. Louis County, Mo., assignor to The Glaser Organization, St. Louis County, Mo.

Filed June 23, 1971, Ser. No. 155,947

Int. Cl. F41b *3/04*

U.S. Cl. 124—7 **19 Claims**



A ball pitching machine comprising a mounting plate, a shaft extending through said mounting plate, a ball throwing arm fixed on one end of said shaft, a ramp for feeding a ball to said ball throwing arm, there being a tension spring engageable with the other end of said shaft to be stressed when a ball is fed to said throwing arm so that upon release of said spring said throwing arm will be forcefully swung to pitch the ball. An adjustment arm is swingably mounted upon said shaft and engaged to said spring for altering the angle of the axis of the spring to the vertical for providing selected trajectory of the pitched ball. The ball pitching machine is motor driven and has a circuitry for maintaining the motor energized during throwing responsive to spring release.

3,754,545

BLOOD PRESSURE RECORDING DEVICE WITH IMPROVED RECORD

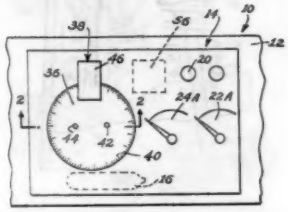
Berel Weinstein, New York, N.Y., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.

Division of Ser. No. 749,518, Aug. 1, 1968, Pat. No. 3,557,779.

This application June 22, 1970, Ser. No. 47,938

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 Q **1 Claim**



A device for recording the blood pressure of a person comprising a cuff adapted to encircle a limb such as an arm of a person. Pressure regulating means is provided to inflate the cuff to a predetermined pressure and to deflate the cuff when the pressure reaches a preselected value. A record is mounted on a movable support, both of which are mounted on the cuff. The support is adapted to move in response to the pressure of said cuff. Writing means is provided for indicating blood pressures on the record. Actuating means responsive to the pulse beats of a person operates the writing means so that the device produces a graphic record of the blood pressure of the person undergoing examination.

3,754,546

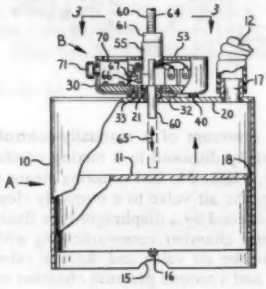
INCENTIVE SPIROMETER

Robert P. Cooper, La Puente, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed June 10, 1971, Ser. No. 151,756

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **12 Claims**



The device has a disposable unit and a re-usable unit. The disposable unit comprises a piston and vertical cylinder, a flexible tube connected with the top of the cylinder and a mouthpiece on the tube. The tube enables a patient to inhale air from the cylinder causing the piston to rise. A controlled leakage is provided between the piston and cylinder making it necessary for the patient to continue inhaling through the tube in order to hold the piston at the top of its upward stroke. The re-usable unit is an indicator unit containing a battery, a signal light and a switch which is held closed as long as the piston remains at the top of its stroke. The light provides incentive for the patient to continue inhalation as long as possible. A counter in the indicator unit records the number of inhalations made in a day or other given period of time.

3,754,547

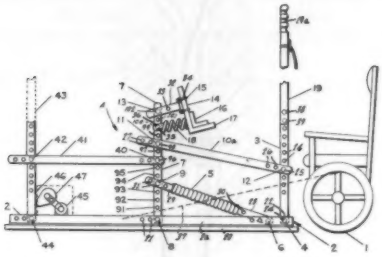
THERAPEUTIC EXERCISE DEVICE

William H. Walker, Alhambra, Calif., assignor to V. J. Industries, Los Angeles, Calif.

Continuation-in-part of Ser. No. 85,200, Oct. 29, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,987

Int. Cl. A61h 1/02

U.S. Cl. 128—25 R 10 Claims



A therapeutic exercise device for flexing various body limbs either singly or in combination, and including apparatus for positioning the hands and feet of a user for simultaneous directional movement, and yieldable resistance means adapted to be overcome by said directional movement.

3,754,548

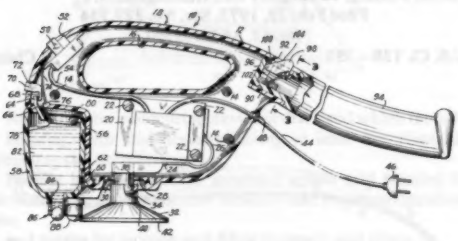
FLUID DISPENSING VIBRATOR

Marie McGrath, 100 W. 57th St., New York, N.Y.

Filed July 3, 1972, Ser. No. 268,324

Int. Cl. A61h 9/00

U.S. Cl. 128—65 9 Claims



A fluid dispensing vibrator having a hand-held housing containing a vibrator motor operatively coupled to a skin vibrating element extending out of the housing. A fluid reservoir having a plurality of dispensing ball valves is releasably mounted on said housing with the ball valves positioned adjacent said skin vibrating element so that said ball valves and skin vibrating element may simultaneously engage the user's skin.

3,754,549

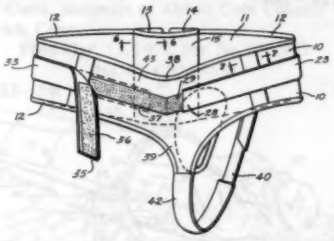
TRUSS

Henry G. Nelkin, Kansas City, Mo., assignor to H. G. Enterprises, Kansas City, Mo.

Filed June 29, 1971, Ser. No. 157,974

Int. Cl. A61f 5/28

U.S. Cl. 128—100 9 Claims



A truss that has a pair of spaced folds at the back of the body portion with flexible fabric extending across the space between the folds and adjusting means that are each connected with the body portion at one of the folds and extends across the other fold. Adjusting straps are each fastened at one end permanently to the body portion and each extends through a loop that is part of the connection for the strap with the back of the body portion. The adjusting straps and the front of the body portion have Velcro fasteners that detachably fasten each strap independently in adjusted position at the front of the truss. The rupture pad is slidably mounted on a strap that runs up and down on the front side of the body portion and has one end fastened in fixed position to the front of the body portion. A Velcro fastener strip runs lengthwise of the strap and cooperates with a Velcro fastener strip that runs lengthwise of the front of the body portion and thus crosswise of the strap. The pad has a ply on the back side having spaced slots through which the strap slidably extends.

3,754,550

CYCLICALLY OPERATED MEDICAL RESPIRATORS

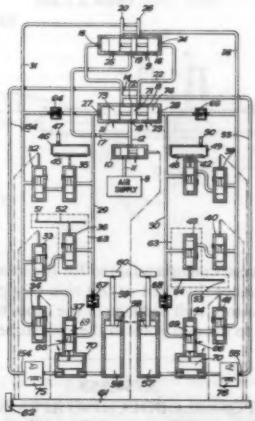
Barry John Kipling, Cambridge, England, assignor to Pye Limited, Cambridge, Cambridgeshire, England

Filed Sept. 15, 1970, Ser. No. 72,349

Claims priority, application Great Britain, Sept. 15, 1969, 45,424/69

Int. Cl. A62b 7/04

U.S. Cl. 128—145.8 6 Claims



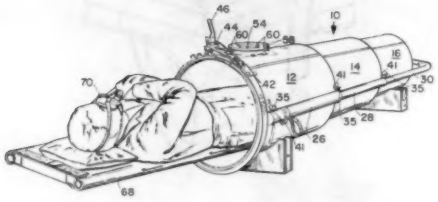
For a medical respirator, a pneumatic drive circuit is provided which operates the respirator inspiratory and expiratory control valves in accordance with any one or more of the three modes of cycling, viz. time cycling, volume cycling or pressure cycling. Separate mode selection is provided for terminating the inspiratory and expiratory periods, each period being terminated at an instant determined by the selected parameter or the first one of the selected parameters.

3,754,551

PORTABLE COLLAPSIBLE RECOMPRESSION CHAMBER

Peter A. Nielsen, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 20, 1971, Ser. No. 181,678
Int. Cl. A61m *16/02*
U.S. Cl. 128—204 **4 Claims**



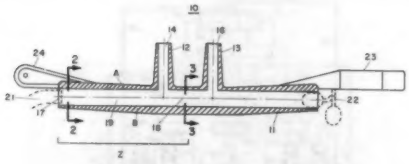
A portable recompression chamber for emergency treatment of and transportation of divers stricken with the "-bends." It is in the form of an elongate pressure chamber of circular cross section capable of receiving a patient on a stretcher. It is collapsible into a small space and has an end closure means which is reversible in order to protect the instruments located thereon during storage.

3,754,552

FLEXIBLE NASAL CANNULA

William R. King, Denver, Colo., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed June 8, 1971, Ser. No. 151,120
Int. Cl. A61m *15/08*
U.S. Cl. 128—206 **2 Claims**



A flexible nasal cannula adapted for the intake of therapeutic gas from either the right or left side of a patient, wherein the top and bottom wall sections of the cross tube are tapered from the ends to the mid point of the cross tube.

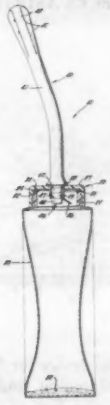
3,754,553

DISPOSABLE DOUCHING APPARATUS

Shirley M. Hewitt, Fullerton, Calif., and Sal Masullo, Las Vegas, Nev., assignors to Arsald, Inc., Fullerton, Calif.

Filed Jan. 7, 1972, Ser. No. 216,179
Int. Cl. A61m *1/00*
U.S. Cl. 128—232 **3 Claims**

Disposable douching apparatus comprising a flexible squeeze bottle, a cap removably connected to the bottle, the cap having a hole therein and a thin disc-shaped member connected to the perimeter of the hole thereby completely sealing the hole, and a nozzle, one end of the nozzle including a circumferential lip at the end thereof and being extendable through said hole in said cap to break at least a portion of the circumferential connection between the disc-shaped member and the cap, the lip at the end of the nozzle engaging the inside of the cap for preventing removal thereof.



3,754,554

ENDOTRACHEAL TUBE MEANS

Hector Felbarg, 12 Kingsley Rd., Huntington, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,734
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **2 Claims**

An endotracheal tube having a protrusion with small orifice at its forward end. An introducer or guide rod extends through the orifice to guide the tube between the vocal cords. The rod has a stop to limit its protrusion from the tube. A handle is provided on the rod to operate it.

3,754,555

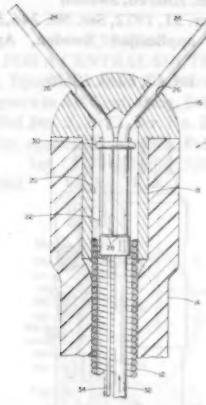
CONTROLLABLE BARBED INTRACARDIAL ELECTRODE

German Schmitt, Vredenweg 8, 44 Munster, Germany

Filed Oct. 5, 1971, Ser. No. 186,654
Int. Cl. A61n *1/04*
U.S. Cl. 128—418 **2 Claims**

A repeatably implantable intracardial electrode for use with a heart stimulation device provides a piston movable axially within a cavity in the electrode body. The piston carries

resilient prongs which move through channels in the electrode body to engage the heart tissue for implantation of the elec-

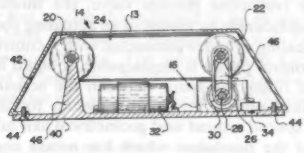


trode. The prongs are retracted when tension is exerted on the piston, and are advanced by force on the piston.

3,754,556
AUTOMATIC NAIL FILE

Jasper J. Watkins, P. O. Box 94, Clifton, N.J.

Filed May 4, 1972, Ser. No. 250,422
Int. Cl. A45d *29/06*
U.S. Cl. 132—73.6 **9 Claims**



An automatic manicuring device is disclosed which includes a housing, with said housing having at least one fingernail receiving slot therethrough;

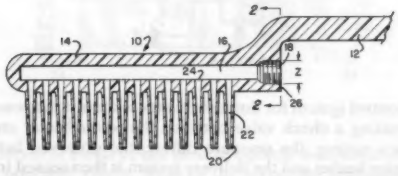
flexible nail filing means mounted within said housing for movement in a plane located beneath said fingernail receiving slot;

and means for moving said filing means in said plane.

3,754,557
LIQUIDS AND FLUIDS DISPENSING APPLICATOR ASSEMBLY

Paul J. Moore, 9 Mack St., Plains, Pa.

Filed Jan. 12, 1972, Ser. No. 217,352
Int. Cl. A45d *24/22*
U.S. Cl. 132—114 **3 Claims**

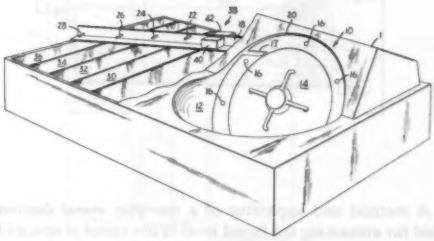


The assembly comprises a comb having hollow teeth in fluid communication with a fluid conduit formed in the spine of the comb. The conduit opens on an aperture which threadedly receives threaded necks of shampoo containers, and the like, or, selectively, a threaded coupling end of a flexible hose.

3,754,558
COIN PROCESSING APPARATUS WITH JAM DETECTION SYSTEM

Barton C. Conant, Westport, and Szee Ming Yao, Norwalk, both of Conn., assignors to Abbott Coin Counter Co., Inc., Greenwich, Conn.

Filed Mar. 13, 1972, Ser. No. 233,987
Int. Cl. G07d *9/00*
U.S. Cl. 133—3 R **9 Claims**

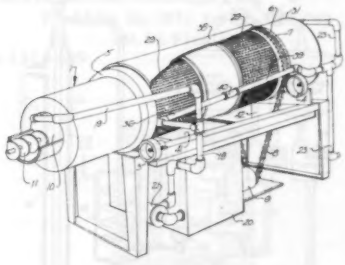


Apparatus for high speed, high volume coin processing comprising sensor elements adapted for sensing coins in continuous non-selective transit therethrough incorporates a coin jam detection system responsive to output signals of the sensor elements.

3,754,559
DRUM TYPE WASHER FOR METAL BORINGS AND THE LIKE

Paul J. Seiwert, Cincinnati, Ohio, assignor to The Macleod Company, Cincinnati, Ohio

Filed Jan. 31, 1972, Ser. No. 222,109
Int. Cl. B08b *3/02, 3/06*
U.S. Cl. 134—65 **18 Claims**



An elongated drum type washer for metal borings, cuttings and fines having a continuous helical vane for advancing the materials to be cleaned from one end of the drum to the other, the drum being divided longitudinally into a plurality of zones for selectively spraying the materials being cleaned with a liquid and then draining them, the draining zones being provided with spaced apart perforated openings in the periphery of the drum for discharging liquid therefrom, the openings lying between contiguous convolutions of the helical vane with laterally disposed baffles overlying the openings, the baffles being arranged to direct the materials being cleaned away from the openings as the drum is rotated while permitting the liquid to be discharged through the openings.

ERRATUM

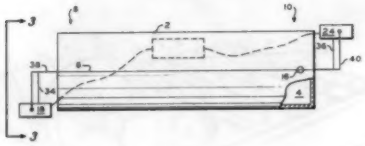
For Class 133—3 R see:
Patent No. 3,754,558

3,754,560

METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE VOLUME OF LIQUID IN A VESSEL

Hadwen A. Clayton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 18, 1971, Ser. No. 189,990
Int. Cl. F16k *31/02*; G05d *9/12*
U.S. Cl. 137—2 12 Claims



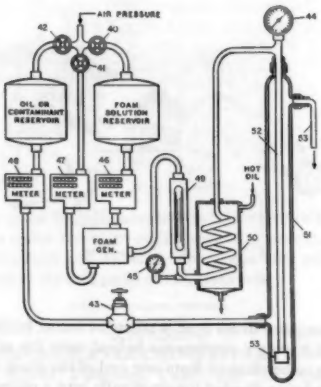
A method and apparatus of a movable vessel discharging fluid for measuring the liquid level in the vessel at spaced locations, delivering a signal in response to the measurements and representative of the volume of liquid in the vessel and maintaining the volume of liquid in the vessel in response to the signal.

3,754,561

FOAM CIRCULATION FLUIDS

Samuel H. Sharman, Berkeley; Ralph House, San Pablo, and Glen W. Anderson, Oildale, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 779,519, Nov. 27, 1968, abandoned. This application Feb. 4, 1972, Ser. No. 223,536
Int. Cl. E21b *21/04*
U.S. Cl. 137—13 4 Claims



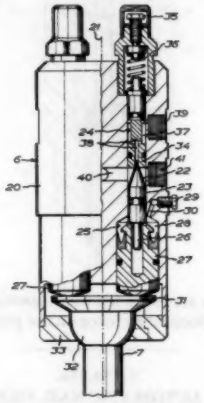
Detergent-range olefin sulfonates containing a minor amount of C_8–C_{15} substantially linear primary alcohols yield aqueous gas-in-liquid foams having exceptionally low resistance to flow. These foams are especially effective circulation fluids in oil wells when for each 100 parts of the sulfonate from 10 to 25 parts of the alcohol is present in the foaming agent mixture.

3,754,562

THROTTLE VALVE MECHANISMS

Nils Gustaf Bonde Gustafsson, Knared, Sweden, assignor to Hyco Hydraulic AB, Knared, Sweden

Filed Apr. 21, 1972, Ser. No. 246,304
Claims priority, application Sweden, Apr. 22, 1971, 5218/71
Int. Cl. F16k *17/36*
U.S. Cl. 137—45 3 Claims



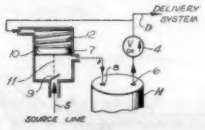
In a throttle valve mechanism having a housing in which a pendulum depending from the housing is universally swingable around a geometrical axis of the housing and in which a plurality of throttle valves are arranged and each have one displaceable throttling valve member for varying the throttling effect of the respective throttle valve, the throttling valve member is displaceable by means of an actuating piston movable in an actuating cylinder connected with a control cylinder in which a control piston is displaceable, a liquid body being enclosed and filling the space between the actuating piston and the control piston, the control pistons for the throttle valves being spaced around said geometrical axis adjacent the upper end of the pendulum which has means engaging the control pistons for displacing them in the control cylinders as a result of swinging movement of the pendulum, the effective cross-sectional area of the actuating pistons being smaller than that of the control pistons so that the actuating pistons will be displaced a greater distance than the distance through which the control pistons are displaced by the pendulum.

3,754,563

AUTOMATIC CONTROL SYSTEM FOR WATER HEATERS

Wayne S. Bouls, 32046 Kingspark Ct., Westlake Village, Calif.

Filed Aug. 19, 1971, Ser. No. 173,204
Int. Cl. F16k *17/22*
U.S. Cl. 137—94 12 Claims



A control system for domestic water heaters is disclosed, incorporating a check valve between the water heater and the delivery system; the pressure differential observed between the water heater and the delivery system is then sensed to control another valve at the inlet to the water heater. Accordingly, in the event of a leak in the water heater, it is isolated from the supply line so that the pressure in the tank

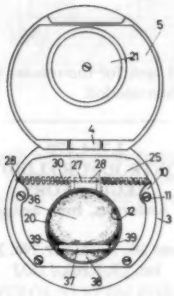
drops to ambient. As disclosed, the pressure drop in the tank is also sensed to isolate the tank from the source of energy, e.g., a gas valve is closed.

3,754,564

VALVE FOR A CENTRAL SUCTION SYSTEM

Per Naumburg, Djursholm, and Jan Norrman, Solna, both of Sweden, assignors to AB Centralsug, Solna, Sweden

Filed Jan. 3, 1972, Ser. No. 215,526
Claims priority, application Sweden, Feb. 26, 1971, 2520/71
Int. Cl. F16l *29/00, 5/00*
U.S. Cl. 137—360 11 Claims



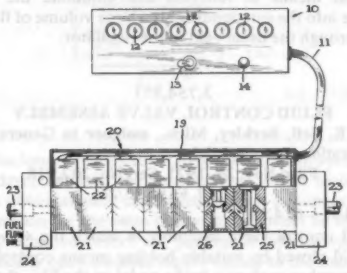
In a system of the type of a central vacuum cleaner system having a plurality of connection boxes for selective connection of suction implements by insertion of a connector in one such box, a normally closed valve disposed within the box. This valve has a valve flap adapted to by swung into opening position within the box by engagement with the connector during insertion thereof. The valve flap has a concave outer surface and at least one shoulder contacting the forward end of the connector at a position spaced from the pivotal point of the flap.

3,754,565

ANTI-THEFT OR USE DEVICE FOR SELF PROPELLED OR STATIONARY ENGINES

Delbert Gennetten, 672 E. Amherst Pl., Englewood, Colo.

Filed Feb. 23, 1971, Ser. No. 117,914
Int. Cl. F16k *35/08*
U.S. Cl. 137—384.4 6 Claims



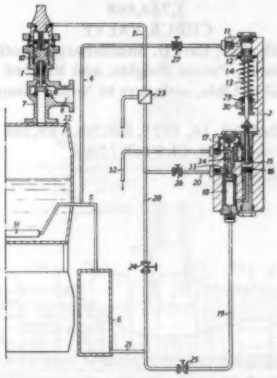
A series of switches are used to operate a series of electrically operated valves. Some of the valves are normally open and some are normally closed and if the incorrect switches are operated a valve will be moved to its opposite state and thus prevent the flow of fuel to the engine.

3,754,566

SAFETY VALVE

Francois Gemigniani, Martigues, France, assignor to Societe D'Exploitation De Brevets Pour L'Industrie & La Marine Societe Anonyme, Martigues, France

Continuation-in-part of Ser. No. 807,640, March 17, 1969, abandoned. This application Apr. 12, 1971, Ser. No. 133,083
Int. Cl. F16k *31/12*
U.S. Cl. 137—488 3 Claims



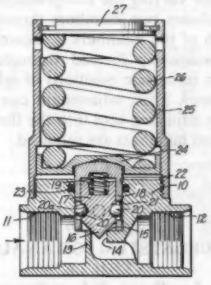
A safety system for a pressure fluid container has a blow-off valve to provide communication between the interior of the container and the atmosphere, a hydraulic ram controlling the blow-off valve, a hydraulic pressure feed circuit for the ram which is connected to the interior of the container through a buffer capacity, and pressure sensing means in which the pressure in the container acts in opposition to spring loading to control pilot valve means, so that when the container pressure rises above a predetermined value, pressure is reduced in the hydraulic pressure feed circuit to the ram, allowing the blow-off valve to open.

3,754,567

BALL LOCK CONTROL VALVE

David E. Whitten, Northridge, Calif., assignor to Air-Dry Corporation of America, Northridge, Calif.

Filed May 30, 1972, Ser. No. 257,700
Int. Cl. F16k *31/12*
U.S. Cl. 137—509 8 Claims



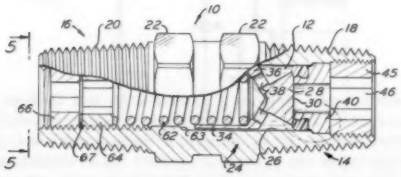
A control valve in which a valve seat is engaged by a closure member carried by a poppet. The poppet is mounted within a surrounding piston. A plurality of balls disposed around the periphery of the poppet engage larger circular openings in the piston to provide a limited amount of longitudinal movement of the poppet within the piston. A poppet return spring urges the closure member toward the valve seat. A strong pressure

reference spring engages the piston, but its pressure is exerted against the valve body and not against the valve seat. Since the valve seat is not subjected to high pressure, it may be made narrow and sharp and only a small pressure differential is required to move the closure member from seating to sealing position.

3,754,568
CHECK VALVE

Bernard J. Gallagher; Earl D. Shufflebarger, both of Mentor; David M. Simko, Parma Heights, and Richard J. Medvick, Cleveland, all of Ohio, assignors to Nupro Company, Cleveland, Ohio

Filed Oct. 14, 1971, Ser. No. 189,208
Int. Cl. F16k *15/02*
U.S. Cl. 137—516.29 **12 Claims**



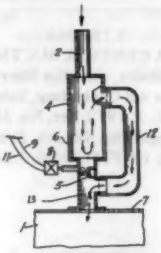
The specification and drawings disclose poppet-type check valves each comprising a body with a through flow passage and a valve member with a generally circular sealing surface positioned within the passage. The valve member is continually biased toward a seat by a coil spring mounted in the passage. An O-ring positioned in a circumferential groove formed about the passage defines the seat. The groove is open only about the axial side facing the valve member. The inner circumference of the groove is of a lesser diameter than the sealing surface of the valve member. The O-ring is positioned within the groove and has a radial thickness sufficiently greater than the radial width of the groove such that when compressed in the groove, a portion extends out of the open side for engagement with the end face of the valve member. The radially inner wall of the groove is provided with a continuous edge surface which is adapted to engage the end face of the valve member to provide a fixed stop for the valve member. Means for varying the compression on the spring are provided and includes two members threaded axially in the passageway. Each of the members is shown as having a non-circular flow passageway formed through its center. The passageways align in certain positions of relative rotation for adjustment purposes. Thus, adjustment can be accomplished by insertion of an adjusting tool into the flow passage and no external adjustment members are required.

3,754,569
RESERVE FUEL SYSTEM FOR AN AUTOMOTIVE VEHICLE

John P. Fallotico, Lyndhurst, N.J., assignor to The Raymond Lee Organization Inc., New York, N.Y.

Filed May 11, 1972, Ser. No. 252,196
Int. Cl. B60k *15/06*
U.S. Cl. 137—572 **2 Claims**

A reserve fuel tank is connected between the fuel filling inlet and the main fuel tank. Fuel enters the main fuel tank via a bypass conduit extending from upper side of reserve fuel tank to the main tank inlet by overflow after filling of the reserve fuel tank. A controllable valve is located in the main tank inlet between the bottom of the reserve fuel tank and the

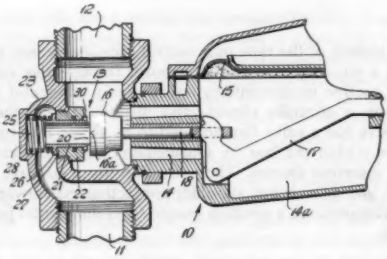


top of the main fuel tank for the release of fuel stored in the reserve fuel tank, when needed.

3,754,570
SAFETY CONTROL FOR FLUID PRESSURE REGULATORS

George C. Hughes, Anderson, Inc., assignor to Textron Inc., Providence, R.I.

Filed June 20, 1972, Ser. No. 264,535
Int. Cl. F16k *15/02*
U.S. Cl. 137—613 **6 Claims**



A safety control for fluid pressure regulators having primary valve means for normally controlling the flow of high pressure fluid downstream and an auxiliary flow control means for restricting downstream fluid flow in the event that foreign matter or structural defects in the orifice or valve seat of the primary valve means prevents the valve from completely sealing off the flow of fluid or locking up under the action of the regulator, the primary orifice yielding to permit the auxiliary valve seat means to function and eliminate the need to discharge into the surrounding air a large volume of fluid, such as gas, through the usual vent in the regulator.

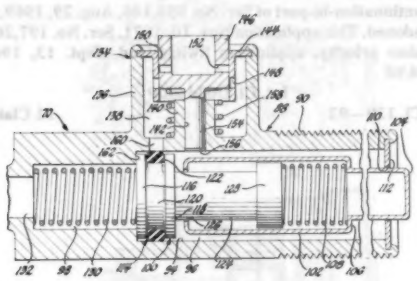
3,754,571
FLUID CONTROL VALVE ASSEMBLY

William E. Bell, Berkley, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1971, Ser. No. 202,918
Int. Cl. F15b *15/26*
U.S. Cl. 137—614.19 **2 Claims**

A fluid control valve assembly in which the valve is normally held closed by suitable holding means controlled by a control member such as a brake pedal or the like, the holding means being movable, upon release, by releasing movement of the control member, through a range of movement away from the valve. The valve is urged open in opposition to the holding means by a fluid pressure differential generated by the presence of a fluid pressure to be vented through the valve when the valve is open, and if the fluid pressure differential is present when the holding means is moved away from the

valve, the valve opens, and upon return movement of the holding means is held by the holding means against closure. When the fluid pressure differential is no longer generated and the



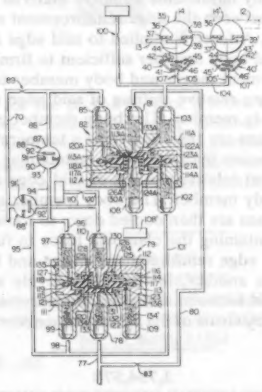
holding means is again moved away from the valve, the valve is closed by valve closing means. Upon subsequent return movement of the holding means the valve is again held closed by the holding means.

3,754,572

PNEUMATIC CONTROL SYSTEM FOR A FUEL BURNING APPARATUS OR THE LIKE

Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 5,709, Jan. 26, 1970, Pat. No. 3,635,645.
This application Nov. 10, 1971, Ser. No. 197,538
Int. Cl. F15b *5/00*; G05d *16/00*
U.S. Cl. 137—625.66 **10 Claims**



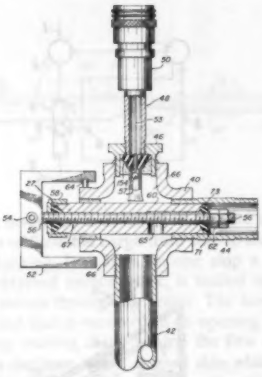
This disclosure relates to a pneumatic control system for a clothes dryer wherein the flow of fuel to the main burner means is pneumatically controlled in such a manner that the ignition means for the main burner means must be first pneumatically actuated before the pneumatic control system will pneumatically open the fuel supply means to the main burner means, the control system including a pneumatically operated logic "memory" unit to assure that the ignition means is always pneumatically operated before the main burner means can be pneumatically operated to its on condition by a pneumatically operated "nand" unit each time there is a requirement to turn on the main burner means. The "memory" unit is prevented from transmitting atmosphere therethrough when being switched by its setting signal.

3,754,573

MULTIPURPOSE GAS METER CHANGE VALVE

John K. Bales, 1814 N. 52 St., Phoenix, Ariz.

Filed Aug. 16, 1971, Ser. No. 172,011
Int. Cl. F17d *1/00*
U.S. Cl. 137—608 **1 Claim**



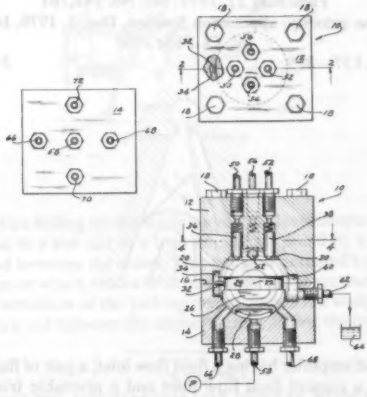
A device to be used when it is desired periodically to change gas meters for inspection (as is required by most State laws) or gas pressure regulators without causing any interruption of the flow of gas to the customer. While the meter and regulator are being changed, a pair of the devices of the inveniton are connected, one into the semi high pressure line, and the other into the low pressure customer's house piping. The device may also be used by gas service companies etc. as a means for shutting off meters during vacancies of apartments or houses.

3,754,574

HYDRAULICALLY-ACTUATED OMNI-DIRECTIONAL FLUID VALVE

Allen Richard Andis, 3209 Elwood Dr., Racine, Wis.

Filed June 19, 1972, Ser. No. 264,238
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.66 **3 Claims**



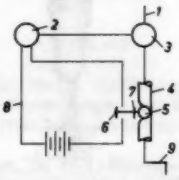
A valve comprising two discrete hydraulic systems in one body; the first system being employed to actuate the valve, the second system being employed to perform the work function. A spherical control member, having passageways and a truncation, is nutated in the body by hydraulically-actuated plungers that engage the truncation to rotate the control member and to selectively direct fluid through the passageways and perform the work.

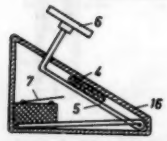
3,754,575

DEVICE FOR FLUID SUPPLY

Veikko Olavi Korhonen-Wesala, Box 217, 450 60 Fargelanda, Sweden

Filed May 16, 1972, Ser. No. 253,870
Int. Cl. F16g 51/00
U.S. Cl. 137—802 3 Claims





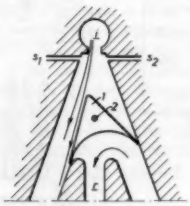
In a fluid supply system of the type having an electric motor actuating either a pump or a valve controlling the flow of fluid, there is provided a flexible conduit portion cooperating with a preloaded lever, which at occurance of a pressure-alteration, brought about at the opening of one or more draw-off valves in the system, will energize the motor to actuate said pump or valve. Hereby the manual activity at drawing off fluid is considerably reduced and the operating time for the motor can be kept substantially to correspond to the time for drawing off.

3,754,576

FLAP-EQUIPPED POWER FLUID AMPLIFIER

Karl Axel Zetterstrom, Trollhattan; Tage Lennart Wetterstad, Ljungby, and Per-Olov Abrahamsson, Opalgatan, all of Sweden, assignors to Volvo Flygamotor AB, Trollhattan, Sweden

Filed May 21, 1971, Ser. No. 145,781
Claims priority, application Sweden, Dec. 3, 1970, 16401/70
Int. Cl. F15c 3/00
U.S. Cl. 137—829 3 Claims



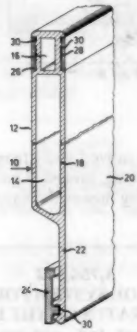
A fluid amplifier having a fluid flow inlet, a pair of fluid flow outlets, a control fluid flow inlet and a pivotable triangular flap member located in the branching point of the fluid flow outlets, said member being located downstream of the control fluid inlet and adapted to open either of said fluid flow outlets. The flap member is free from direct actuation by the control fluid but is actuated by the fluid flow guided into either outlet and is pivotably journalled about an axis located within the triangular contour, whereby the flap member is automatically switched over to a position with the selected active outlet opened and the other passive outlet completely closed.

3,754,577

HARNESS FRAME SUPPORT ROD POSSESSING INCREASED BENDING STRENGTH

Rudolf Heller, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 854,146, Aug. 29, 1969, abandoned. This application Nov. 10, 1971, Ser. No. 197,202
Claims priority, application Switzerland, Sept. 13, 1968, 14224/68
Int. Cl. D03d 9/00
U.S. Cl. 139—92 31 Claims



A support rod for a harness frame of a loom and method for the fabrication of such support rod wherein at least one edge reinforcement means is mounted at the region of at least one of the extremities of a lightweight support rod body member, with a thermally hardenable adhesive material interposed at the interface between the edge reinforcement means and the body member. A force is applied to said edge reinforcement means and said body member sufficient to firmly clamp such edge reinforcement means and body member to one another while preventing relative shifting of said edge reinforcement means and body member. The body member and edge reinforcement means are then heated to a temperature sufficient to set the adhesive material while maintaining the clamping force to prevent relative shifting of said edge reinforcement means and body member. The body member and edge reinforcement means are then cooled down to room temperature while still maintaining the clamping force to further prevent shifting of the edge reinforcement means and body member relative to one another, in order to provide a substantially stress-free bond between said edge reinforcement means and body member by virtue of the set adhesive material.

3,754,578

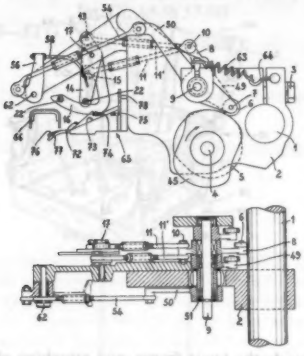
WEFT YARN MIXING DEVICE FOR SHUTTLELESS LOOMS

Pierre Remond, Bourgoin-Jallieu, France, assignor to Ateliers Diederichs, Bourgoin-Jallieu, France

Filed Nov. 17, 1971, Ser. No. 199,630
Claims priority, application France, Dec. 21, 1970, 7047157
Int. Cl. D03d 47/38
U.S. Cl. 139—122 W 3 Claims

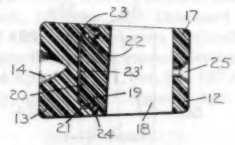
In a shuttleless weaving loom wherein the weft yarn transfer is effected according to the so-called "Gabler" system, a device for mixing two weft yarns under the control of a pair of cams acting upon respective yarn guides through the medium of a lever pivotally connected to a pair of adjustable links, one pivoted to an arm above the pivot axis thereof, the other to another arm but beneath the pivot axis thereof, one arm being movable from its operative position to its inoperative position, and vice versa, a positioning bent fork controlled by another

cam being provided for engaging the weft yarn moving past said fork and to lower same to an operative position in which it



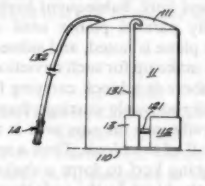
can be picked up by an insertion member, with a very smooth movement precluding any damage to the yarns.

3,754,579
LOOM PICKER
Joseph M. Budzyna, East Douglas, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Mar. 27, 1972, Ser. No. 238,251
Int. Cl. D03d *49/36*
U.S. Cl. 139—159 **2 Claims**



A picker for the picker stick of a loom which includes a body portion, a shuttle engaging member removably and operatively associated with said body portion having a shock absorbing element interposed therebetween for cushioning the forces of impact created by a loom shuttle upon the shuttle engaging member.

3,754,580
SUCTION DEVICE
Elbert J. Perry, 2929 N.E. 49th St., Fort Lauderdale, Fla.
Filed Dec. 2, 1971, Ser. No. 203,954
Int. Cl. B65b *31/04*
U.S. Cl. 141—65 **1 Claim**

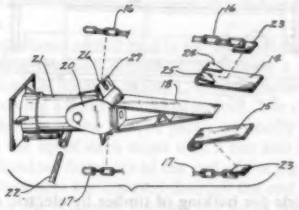


The invention is directed to a suction device for removing powdered ballast from a deflated vehicle tire, comprising a tube insertable in the ballast for removal thereof by suction and a series of draft tubes on the periphery of the suction tube and terminating below the mouth of the suction tube to agitate the powdered ballast and deliver a draft of air to effect complete removal of the ballast from a tire carcass.

3,754,581
METHOD AND APPARATUS FOR CARGO TRANSFER SYSTEM
Robert Taggart, 3930 Walnut, Fairfax, Va.
Filed June 1, 1971, Ser. No. 148,719
Int. Cl. B67c *3/34*
U.S. Cl. 141—279 **26 Claims**

The present invention is directed to method and apparatus for the transfer of flowable cargo from ship to ship without the necessity of docking. It utilizes on one ship a transfer hose that, in the preferred embodiment, is trailed out behind the first ship as it moves through the water. The hose is equipped with a probe end that is received in an opening in the bow of the second ship moving along behind the first ship. Locking means secures the hose in the second ship while the transfer takes place. The probe end is provided with sealing means that may be opened and closed, depending upon the direction of the pumping action. Pumps are provided on both ships, and in the second ship the pump is in the chamber that receives the transferred cargo. The probe end is provided with float, ballast and trim means to maintain it properly in the water as it is received and held by the second ship.

3,754,582
TREE FELLING DEVICE
Christopher P. Emerson, Lamoni, Iowa
Filed Oct. 12, 1971, Ser. No. 188,277
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 F **6 Claims**

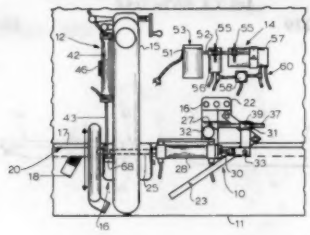


A tree-felling device having a pair of shims adapted to be inserted in a saw cut in a tree trunk and spread by a wedge inserted between the shims. The wedge is actuated by a jacking means to which chains attached to the shims are fastened such that actuation of the jacking means causes the wedge to enter the saw cut between the shims, thereby felling the tree.

3,754,583
INDEXING MECHANISM FOR DENTAL BLOCK WOOD MOLDING
Harry T. Ingram, 1800 Rankin St., Raleigh, N.C.
Filed May 31, 1972, Ser. No. 258,323
Int. Cl. B27c *5/02*; B27f *1/08*; B27m *3/08*
U.S. Cl. 144—133 R **7 Claims**

In a conventional radial arm type power saw adapted for dado cutting operations, an indexing mechanism is adapted to draw stock lumber past the sawing blades at predetermined

evenly spaced intervals, and simultaneous with each spaced interval, is adapted to cause the saw to cut a notch of predetermined dimension in the stock lumber thereby continuously forming dental block wood molding.



3,754,584

ELECTRODE FOR BARKING OF TIMBER BY ELECTRIC CURRENT

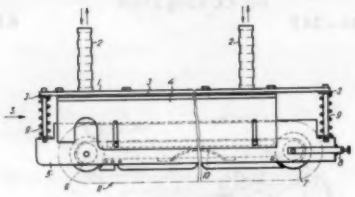
Milan Bumerl, Bechyne, Czechoslovakia, assignor to Vedecky lesnicky ustav Vysoke skoly zemedelske v Praze, Kostelec nad Cernymi lesy, Czechoslovakia

Filed Jan. 20, 1972, Ser. No. 219,430

Claims priority, application Czechoslovakia, Feb. 15, 1971, 1104/71

Int. Cl. B27l 1/00

U.S. Cl. 144—208 R **4 Claims**



An electrode for barking of timber by electric current, introduced into the border layers between the wood and the bark, consisting of partial electrodes linked to an endless band, adapted for penetrating into the bark, which partial electrodes remain in the course of passage of the timber through the barking device stationary in the bark for their whole operating period.

3,754,585

METHOD OF CONSTRUCTING AN ARTICLE OF FURNITURE

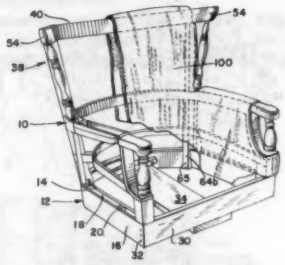
Edward L. Clark, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,071

Int. Cl. B27f 7/00

U.S. Cl. 144—314 B **10 Claims**

A method of constructing an article of furniture having at least a basic substantially horizontal frame comprises forming of a pair of strip-like members into a nested inner and outer spaced apart relation so as to produce a gap therebetween, inserting bridging spacers into the gap and subsequently securing the spacers to the members so as to permanently maintain the members in their relationship and thereby provide the basic frame, and attaching of a supporting leg assembly to the basic frame.



3,754,586

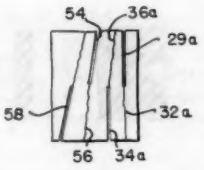
PROCESS AND APPARATUS FOR MAKING SHAKES

David H. Daniels, 1506 Laura St., Aberdeen, Wash.

Filed May 10, 1971, Ser. No. 141,903

Int. Cl. B27c 9/00

U.S. Cl. 144—326 **17 Claims**



A method and apparatus for making shakes especially adapted for wood blocks having angular deviations of the grain.

A kerf is made part way into one end of the shake block generally parallel to the grain, and the block is then split as a general continuation of the kerf. If, because of irregularities in the grain of the wood, the cleavage plane along which the block is split deviates angularly from the kerf plane, when a second kerf is made into the other end of the block, the plane of the second kerf is made to deviate from the plane of the first kerf in the same manner that the first cleavage plane deviates from the first kerf plane. A second split is then made as a continuation of the second kerf. Subsequent kerfs and splits are made along generally parallel planes until another planar deviation of the split plane is noted, and subsequent kerfs are angularly adjusted to make up for such deviation.

In the apparatus, there is a block carrying frame rotatably mounted to a laterally movable carriage frame, so that the block is moved laterally into the saw as it is rotated 180° to form a kerf in one half of the block. Then a splitter descends into the upwardly facing kerf to form a shake blank. Upper and lower jaws grasp the block by the ends thereof. These jaws have independently operable teeth sets to advance the block into the cutting and splitting area at the proper angular relationship with respect to the saw.

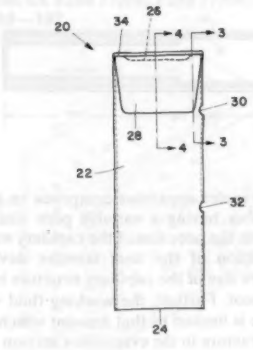
In the process of a second embodiment, between each of the partial saw cuts mentioned above, a complete end-to-end diagonal cut is made between adjacent kerf beginning portions so that shakes are formed as the block is being split.

3,754,587

GOLF CLUB COVER

Joseph V. Rainieri, 3404 State St., North Canton, Ohio

Filed Nov. 18, 1971, Ser. No. 199,931
Int. Cl. A63b 55/00
U.S. Cl. 150—52 G 11 Claims



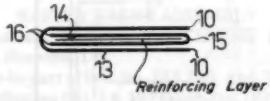
A flexible plastic cover for a golf bag and clubs to protect the same from the weather. The cover is a tube formed of a flexible plastic film that has an open lower end, a pair of notches on one side, and an opening at its top end which is covered by a flap.

3,754,588

PNEUMATIC TIRE WITH FOLDED BELT PLIES

Heinz-Dieter Rach, Garbsen, and Ekkehard Grollich, Hannover, both of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Apr. 26, 1971, Ser. No. 137,423
Claims priority, application Germany, Apr. 30, 1970, P 20 21 267.3
Int. Cl. B60c 9/20
U.S. Cl. 152—361 FP 2 Claims



A pneumatic vehicle tire with a folded belt having one or more layers of U-shaped cross section, in which with a positive camber of a vehicle wheel having the said tire mounted thereon, the free ends of the belt legs are located within the shoulder area of the tire and on that side of the tire which faces toward the vehicle on which the wheel is mounted and with a negative camber of the vehicle wheel are located within the shoulder area of that side of the tire which faces away from the vehicle.

3,754,589

CURTAIN HAVING A SELF-CONTAINED SHIRRING ARRANGEMENT

Eli Heimberg, North Dartmouth, Mass., and Marvin Rosenberg, New York, N.Y., assignors to Cameo Curtains, Inc., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,681
Int. Cl. A47h 1/00
U.S. Cl. 160—349 9 Claims

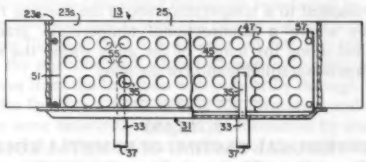
A curtain having an integral tie-back arrangement includes a piece of flexible material, part of which is fixed to the curtain for providing a channel from one of its vertical edges to the other of its vertical edges. An elongated flexible member which extends through the channel is fixed at one end to one of the vertical edges. As a result, if the free end of the elongated flexible member is pulled, the curtain is shirred along its width. The flexible material supports a device having a circular loop and an S-shaped section to which the elongated flexible member may be frictionally tied so as to support the shirred curtain. After the curtain is hung, the loop may be coupled to a nail on its window, thereby supporting the tie-back arrangement.

3,754,590

METHOD OF MAKING AND USING A CONTINUOUS CASTING CHILL BASKET

Robert E. Cashdollar, Sr., Butler, Pa.

Filed Apr. 18, 1972, Ser. No. 245,230
Int. Cl. B22d 11/08
U.S. Cl. 164—1 4 Claims



There is disclosed a chill basket for the chill mold of a continuous casting line and a method of making a chill basket. The chill basket is formed of like L-shaped perforated sheets, each sheet having a lip at the end of its foot. The chill basket is formed at the site of the line, or partly or wholly in the mold, by securing the lip of each sheet with a nut and bolt or Dzus fastener or kindred fasteners to the end of the leg of the other sheet. The fasteners are inserted through the end of the leg of each sheet in the direction towards the lip of the other sheet and away from the wall of the chill mold so that the end of the fastener does not protrude towards the mold wall presenting the hazard that it may perforate the wall and permit the cooling water to penetrate into the molten steel.

3,754,591

METHOD OF MAKING RIM-STABILIZED STEEL INGOTS

John W. Bales, Jr., North Huntingdon Twsp., Westmoreland County, and Michael A. Orfhoski, Duquesne, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 118,498, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 49,189, June 23, 1970, abandoned.
Filed Aug. 31, 1972, Ser. No. 285,401
Int. Cl. B22d 27/18, 27/20
U.S. Cl. 164—57 8 Claims

Rim-stabilized steel ingots are produced by teeming a rimming-type steel into an ingot mold until the ingot is about 80–95 percent full, whereupon teeming is interrupted to allow a rimming action in the mold for a period of from ½ to 15

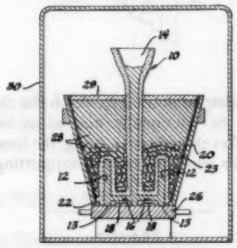
minutes. Thereafter, teeming is continued until the mold is full. After teeming is commenced following the rimming action, sufficient molten aluminum is added to the mold to produce an SK steel within the rim, all of said aluminum being added prior to completion of the steel teeming.

3,754,592

METHOD FOR PRODUCING DIRECTIONALLY SOLIDIFIED CAST ALLOY ARTICLES

Richard M. Mullen, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 15, 1972, Ser. No. 226,491
Int. Cl. B22d 27/06
U.S. Cl. 164—60 5 Claims



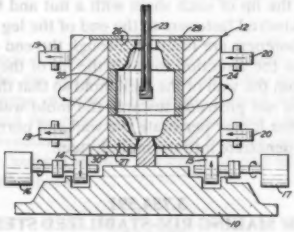
A method of producing directionally solidified cast alloy articles is disclosed wherein a porous, shell mold having openended mold cavities is filled with molten alloy while seated on a low heat conductive surface and is allowed to cool. The filled mold is then moved to a highly heat conductive surface and is reheated to a temperature above the melting range of the alloy where a unidirectional temperature gradient is established along the length of the alloy within the mold to cause directional solidification of the alloy.

3,754,593

CENTRIFUGAL CASTING OF BI-METAL ROLLS

Morris Denor Stone, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Dec. 6, 1971, Ser. No. 205,259
Int. Cl. B22d 13/02, 25/06
U.S. Cl. 164—95 3 Claims



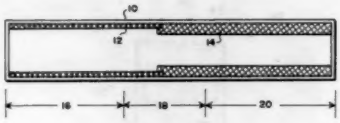
A method for centrifugally casting bi-metal or composite iron and steel rolling mill rolls. The shell of the roll is centrifugally cast by rotating a mold with its major axis arranged vertically, in which, immediately before the shell metal is completely solidified, the rotation of the mold is greatly reduced or stopped and unsolidified shell metal is drained. Immediately after this, the mold is filled with a second metal that makes up the core portion of the roll as well as the neck portions, during which period the mold is static or rotated at a low r.p.m. around its vertical axis as the second metal is fed to the mold from the top thereof.

3,754,594

UNILATERAL HEAT TRANSFER APPARATUS

James K. Ferrell, Raleigh, N.C., assignor to Sanders Associates, Inc., South Nashua, N.H.

Filed Jan. 24, 1972, Ser. No. 220,216
Int. Cl. F28d 15/00
U.S. Cl. 165—32 9 Claims



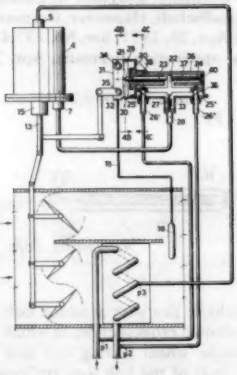
Unilateral heat transfer apparatus comprises an evacuated heat transfer chamber having a variable pore size capillary structure therein with the pore size of the capillary structure in the evaporator portion of the heat transfer device being smaller than the pore size of the capillary structure in the condenser portion thereof. Further, the working fluid within the heat transfer device is limited to that amount which will saturate the capillary structure in the evaporator section only.

3,754,595

DEVICE FOR THE AUTOMATIC PROPORTIONAL CONTROL OF PHYSICAL QUANTITIES IN A HYDRAULIC CIRCUIT

Angelo Serratto, Piazza Novelli 10, Milan, Italy

Filed Mar. 17, 1971, Ser. No. 125,241
Claims priority, application Italy, Mar. 23, 1970, 22290 A/70
Int. Cl. G05d 23/12
U.S. Cl. 165—36 6 Claims

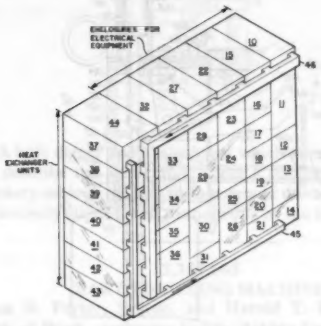


A device for the automatic proportional control of physical quantities in a hydraulic circuit which is hydraulically operated by the same water flowing in the circuit or system to be controlled, particularly for the peripheral units of large centralized air conditioning plants. A hydraulic motor of a control unit is actuated by the difference in hydraulic pressure between the inlet and the outlet of each of the heat exchangers and this actuation is controlled in a proportional mode by a regulation member. One of a two chambers defined by a piston of the hydraulic motor is connected to a section of the heat exchanger which is in between the inlet and outlet thereof and has an intermediate value of pressure. The other chamber is connected to a port of the regulation member which is coupled alternately with the inlet or the outlet of the heat exchangers depending on the type of variation, i.e., increase or decrease with respect to the value taken as reference of a selected physical quantity, such as temperature. A cam shaft linked to a piston rod of the hydraulic motor provides a feedback effect, whereby the regulation is made proportional.

3,754,596
COOLING SYSTEM FOR MULTIPLE ELECTRICAL EQUIPMENTS

Clyde L. Ward, Jr., El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1971, Ser. No. 204,435
Int. Cl. F28d *15/00*; F25d *17/04*; H01l *1/12*
U.S. Cl. 165—107 6 Claims

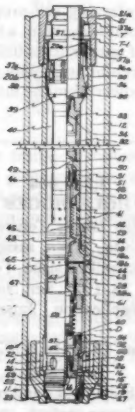


A plurality of electrical equipments mounted in separate enclosures is cooled by multiple heat exchanger units connected to a common path directing coolant from the heat exchanger units to each of the enclosures in which the electrical equipments are mounted. A separate path connected to each of the enclosures housing the electrical equipments provides a common return for directing the coolant from the electrical equipments to each of the heat exchangers after it has performed its cooling function. The multiple heat exchanger units thus connected in common paths for both directing the coolant to the electrical equipments and returning it from the electrical equipments provides all electrical equipments with sufficient coolant to maintain minimum operation even though one of the heat exchanger units malfunctions or is inoperative. Continuity of the functions performed by the plurality of electrical equipments connected in the cooling system is thus insured.

3,754,597
SAFETY VALVE ASSEMBLY

Henry U. Garrett, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 173,360, Aug. 20, 1971. This application Oct. 14, 1971, Ser. No. 189,079
Int. Cl. E21b *33/03*
U.S. Cl. 166—72 9 Claims

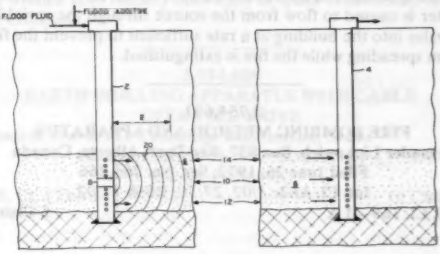


Opening and closing of a subsurface safety valve is regulated by the pressure communicated to the valve through a tubing string which extends to the well's surface. The valve is retrievable through the tubing string and well production is through a casing string which surrounds the tubing. Control fluid in the tubing string is maintained at or above a predetermined pressure and a drop to a lower pressure due to wellhead damage or the like causes the valve to automatically close. The control fluid may be injection gas used to artifically produce the well. In the latter modification, the valve remains open so long as a predetermined injection gas pressure is maintained.

3,754,598
METHOD FOR PRODUCING A HYDROCARBON-CONTAINING FORMATION

Carl C. Holloway, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1971, Ser. No. 196,673
Int. Cl. E21b *43/22*
U.S. Cl. 166—249 6 Claims



A hydrocarbon-containing formation penetrated by at least one in-jection well and at least one producing well is produced by passing flooding fluid at a preselected rate into the formation via the injection well while transmitting oscillatory pressure waves from the injection well outwardly through the formation for forming a wave zone in the formation and moving the wave zone outwardly through the formation by altering at least one of the frequency or amplitude of the oscillatory pressure wave transmissions.

3,754,599
USE OF MICELLAR SOLUTIONS TO IMPROVE PERFORATING PROCESS

Jack L. Hummel, Littleton, and Marvin A. Svaldi, Morrison, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Int. Cl. E21b *43/26, 43/27, 32/119*
U.S. Cl. 166—297 13 Claims

A process of perforating an oil-bearing subterranean formation wherein the perforations in the reservoir are caused by a hole-producing apparatus, the improvement comprising perforating the reservoir in the presence of a micellar dispersion. The micellar dispersion can be at a pressure sufficient to cause the dispersion to displace out into the reservoir after the perforations are effected. Cleaning of the perforations, removing mud filtrates, etc., are effected with the dispersion. Where water sensitive reservoirs are perforated, an oil-external dispersion is used since it is compatible with such reservoirs.

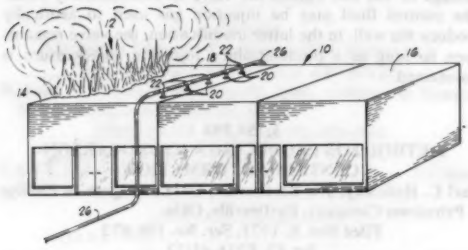
3,754,600
METHOD OF PREVENTING THE SPREAD OF AND EXTINGUISHING FIRES

Norman C. Miller, Rt. 1, Box 105 N, Oklahoma City, Okla.

Filed Dec. 3, 1971, Ser. No. 204,638
Int. Cl. A62c
U.S. Cl. 169—1 A 5 Claims

The present invention relates to a method of preventing the spread of and extinguishing a fire in a building structure. By

the present invention a plurality of holes are formed in the roof of the building structure positioned transversely to the path of the fire and a sprinkler nozzle apparatus is placed within each of said holes so that water flowing through the



sprinkler nozzles is directed into the building structure. Each of the sprinkler nozzles is connected to a source of water, and water is caused to flow from the source through the sprinkler nozzles into the building at a rate sufficient to prevent the fire from spreading while the fire is extinguished.

3,754,601

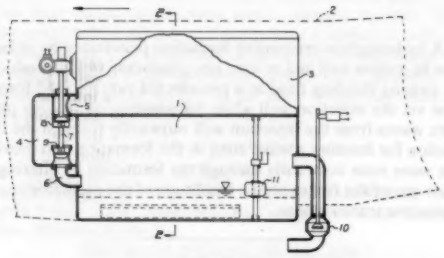
FIRE BOMBING METHOD AND APPARATUS

Alexander Linkewich, Box 857, Red Deer, Alberta, Canada

Filed June 26, 1972, Ser. No. 266,266

Int. Cl. A62c *3/02, 27/30;* **B05b** *17/02*

U.S. Cl. 169—1 A **5 Claims**



A fire bomber is fitted with a large container for storing long-term retardant. A measuring tank is connected between the container and the drop tank of the aircraft; a small measured charge of retardant can thus be introduced into the drop tank when required. In use, the bomber, almost fully loaded with retardant, is flown to a lake close to a fire to be controlled. A small amount of water is taken on and mixed with the charge of retardant in the drop tank to produce a minimum effective load of retardant slurry. The bomber flies to the fire and drops the slurry thereon. It then returns to the lake to mix a new batch of slurry. This procedure is repeated until the supply of retardant is exhausted. The technique is useful in that its use enables a relatively slow amphibious bomber such as a Canso PBY, to drop as much long-term retardant on a fire as relatively high-speed bombers, such as an A–26 or TBM, operating from an airport.

3,754,602

FIRE EXTINGUISHING SYSTEM

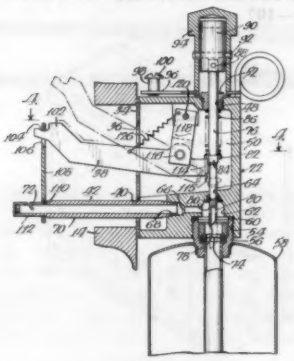
John T. Magdars, Northbrook, Ill., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.

Filed July 16, 1971, Ser. No. 163,289

Int. Cl. A62c *3/10, 13/40, 35/12*

U.S. Cl. 169—2 A **10 Claims**

A fire extinguisher particularly suited for use in conjunction with the engine compartments of boats or the like which is operable automatically in response to the detection of a fire or which may be manually operated from a remote location. The extinguisher includes a container for a fire extinguishing material which may be mounted by means of a housing on the exterior wall of an engine compartment or the like and includes a nozzle extending through an opening into the compartment. A piercing type actuator is normally held in a posi-



tion away from a diaphragm sealing the container by a lever extending through the opening into the engine compartment which, in turn, is held in place by a fusible link extending between the lever and the nozzle. The invention also contemplates the provision of a unique cocking mechanism for the actuator.

3,754,603

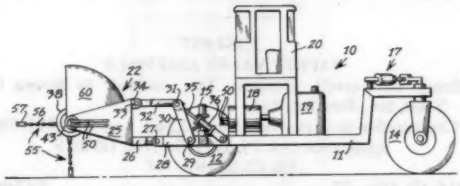
LAND CLEARING MACHINE

Nelson H. Bogle, Rt. 1, Sledd Creek Rd., Gilbertsville, Ky.

Filed Oct. 12, 1971, Ser. No. 188,120

Int. Cl. A01b *33/02;* **A01d** *55/18*

U.S. Cl. 172—45 **6 Claims**



A mobile frame, preferably self-propelled, supporting for adjustable vertical pivotal movement a transverse rotary drum carrying a plurality of circumferentially and axially spaced flails. The drum is driven internally by a fluid motor supplied with a source of fluid power from the mobile frame.

3,754,604

TRUCK-MOUNTED HOLE DIGGER AND PILE DRIVER

Kohsaku Inaba; Toshiro Ohga; Teturo Ozono, and Seisaku Yoshida, all of Tokyo-to, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 18, 1971, Ser. No. 200,087

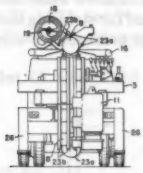
Claims priority, application Japan, Nov. 18, 1970, 45/114606

Int. Cl. E21c *11/02*

U.S. Cl. 173—28 **1 Claim**

In a truck-mounted hole digger and pile driver a mast comprises an upper and a lower section, and the upper section is mounted on a rotary table or frame so that it may be raised upright in hole digging or pile driving operation while the

lower section is held upright at the rear of the table or frame and is adapted to be removably joined to the upper section when it is raised upright through a ball-and-socket joint or the



like. A hole digger and a pile driver which are mounted on the mast describe the same circle about a common center when the rotary table is rotated so that te pile driver may be easily and precisely aligned with the hole dug by the hole digger.

3,754,605

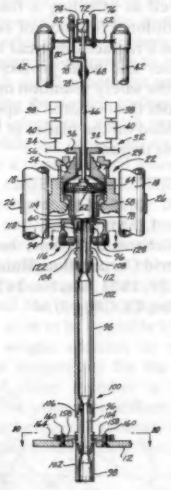
EARTH DRILLING MACHINE

Wilson B. Porter, Seattle, and Harold T. Klein, Bellevue, both of Wash., assignors to The Robbin Company, Seattle, Wash.

Division of Ser. No. 75,020, Sept. 24, 1970, Pat. No. 3,695,364. This application Mar. 30, 1972, Ser. No. 239,467

Int. Cl. E21b *3/02*

U.S. Cl. 173—57 **5 Claims**



A traveling support frame is mounted for up and down travel by two parallel guide columns secured at their lower ends to a base frame. A portion of the traveling frame projects laterally of the drive columns and supports two drive motors, two reducing gearing assemblies, a collector gearing assembly and drive head means. The traveling frame and equipment carried thereby are moved up and down by triangularly arranged thrust ram means, each comprising a downwardly opening, upwardly projecting, piston chamber having a lower mounting portion originally secured to the traveling frame and a downwardly directed piston having a lower mounting portion secured to the base frame.

The drive head includes a breakout wrench having a plurality of laterally swinging wrench jaws moved in and out by linear fluid motors. The wrench jaws have radially inwardly directed wrench portions which are like spanner wrenches. The free end of each wrench jaw makes abutting contact with a shank portion of the adjacent wrench jaw, so that in use the wrench jaws brace each other and form a compression ring surrounding the engaged drill pipe.

The drill head includes a tool joint component which is movable axially a limited amount relative to the traveling cross frame. A connector rod connects this tool joint component to the piston of a linear fluid motor supported axially above the drill head. Fluid is introduced into the motor below the piston for the purpose of counterbalancing the weight of the drill head and any drill pipe connected thereto.

A holding wrench is located below the turning wrench. It comprises a plurality of wrench jaws pivotally mounted for lateral swinging movement, a surrounding control ring, and individual links interconnected between each wrench jaw and the control ring. The control ring is rotated by linear fluid motors. Rotation in one direction causes the links to move the wrench jaws radially inwardly into a position of engagement with holding wrench receiving portions on drill pipe, and movement in the opposite direction causes the links to move the wrench jaws radially outwardly in space relationship from the drill pipe.

3,754,606

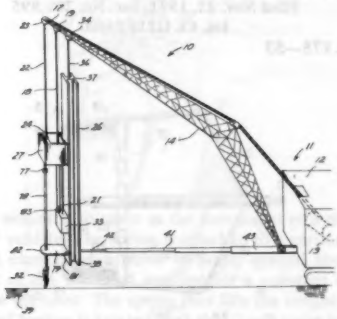
EARTH DRILLING APPARATUS WITH CABLE OPERATED DRIVE

James S. Ward, 963 Crestridge Rd., Omaha, Nebr.

Filed Oct. 20, 1971, Ser. No. 190,910

Int. Cl. E21b *3/02*

U.S. Cl. 173—145 **10 Claims**



An earth drilling apparatus for use with a basic hoisting machine, the apparatus having a carriage slidably mounted on a guide member, a drum rotatably mounted in the carriage and operably connected through a gear and clutch unit to an auger, and a weight connected to a cable frictionally engaging the drum and secured to the powered drum mounted on the hoisting machine, wherein upon the reeling of the cable onto the powered drum the frictional engagement of the cable with the drum causes the drum to rotate which in turn causes the auger to rotate.

3,754,607

EQUIPMENT FOR USE IN OFFSHORE WELLS

Francois Van Daalen, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed June 14, 1971, Ser. No. 152,843

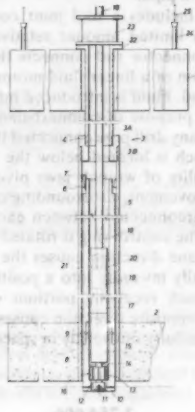
Claims priority, application Great Britain, June 18, 1970, 29,651/70

Int. Cl. E21b *33/13*, *15/02*

U.S. Cl. 175—7 **14 Claims**

A conductor string, suitable to be lowered into an offshore borehole during drilling, is telescopically arranged in a

pedestal conductor extending between a buoyancy member and a weighted base. The diameter of the string is preferably



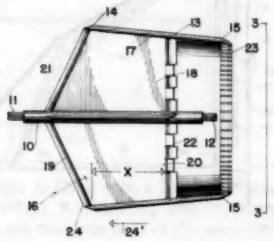
equal to the diameter of the upper part of the pedestal conductor.

3,754,608

CUTTER KNIFE FOR EARTH CORING

Stanley B. Baille, and Stanley G. Atkins, both of Winnipeg, Manitoba, Canada, assignors to Armadillo Holdings Ltd., Winnipeg, Manitoba, Canada, by said Baille

Filed Nov. 22, 1971, Ser. No. 200,895
Int. Cl. G21c *15/00*
U.S. Cl. 175—53 **6 Claims**



A knife component for push-pull type earth coring includes a central shaft and a surrounding shroud or shell held concentrically to the shaft by a plurality of cutter blades or webs. The shroud or shell tapers from the front to the back to compress the cut core slightly and the rear side of the cutter blades are provided with offset teeth to thrustably engage the core during the core pushing or extruding phase.

3,754,609

DRILL STRING TORQUE TRANSMISSION SLEEVE

William R. Garrett, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.

Filed Sept. 21, 1970, Ser. No. 73,959
Int. Cl. E21b *17/043, 17/10*; E21c *9/00*
U.S. Cl. 175—323 **42 Claims**

A lower drill string assembly useful in the rotary system of drilling oil wells wherein a tubular drill string is rotated while fluid is circulated down the string and up the earth bore includes tubular lower drill string members, such as adjacent drill collars or two parts of a stabilizer body, interconnectable by a modified rotary shouldered connection including a mandrel between the pin shoulder and the screw, i.e., the box engaging part of the pin, and a fluid sealing, torque transmission sleeve around the mandrel between the pin shoulder and the shoulder formed by the box mouth. For safety, to avoid junking the well, means is provided to retain the sleeve on the mandrel, and the retention means, e.g. a peg and slot or loose fitting threads, allows relative axial movement of the sleeve and mandrel as required for stressing the sleeve and pin axially sufficiently to transmit axial torque through the sleeve from

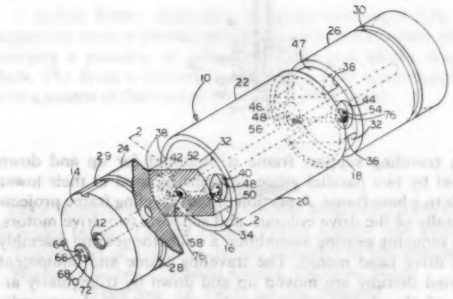
pin shoulder to box shoulder, thereby reducing the torque load on the pin, as well as effecting a fluid tight seal. The sleeve performs an additional function of contacting the side of the well bore, e.g., as a replaceable wear resistant unit or as a replaceable centralizer and wear protector or fixed blade reamer-stabilizer, and the safety retention means can transmit torque to the sleeve from the mandrel. A special combination of hard facings is provided on the blades of the reamer-stabilizer at the sides and ends thereof.

3,754,610

LOAD CELL

Owen Paelian, and Richard L. Kellar, both of Huntsville, Ala., assignors to Torrid Corporation, Huntsville, Ala.

Filed July 29, 1971, Ser. No. 167,104
Int. Cl. G01g *3/14*
U.S. Cl. 177—211 **15 Claims**



This invention relates to load measurement devices of the type generally referred to as load cells in which the deformation of a material subjected to a stress is electrically measured, and particularly to a load cell in the form of a pin adapted to be employed in a clevis assembly to support a load to be measured.

3,754,611

COUNTERWEIGHT ADDITION AND REMOVAL DEVICES FOR USE WITH BALANCES

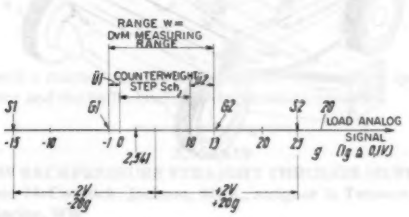
Erich Emil Karl Knothe, Gottingen-Geismar, and Franz-Josef Melcher, Gottingen-Nikolausberg, both of Germany, assignors to Sartorius-Werke GmbH, Gottingen, Germany

Filed June 22, 1972, Ser. No. 265,285

Claims priority, application Germany, June 23, 1971, P 21 31 058.7

Int. Cl. G01g *1/28*

U.S. Cl. 177—235 5 Claims



A counterbalance weight addition or removal device for automatic use with a balance, a control circuit being provided to control the device, which device is arranged to deposit and lift from the balance, a plurality of counter weights in equal weight steps. The balance produces an electrical signal (load analog signal) proportional to the portion of a load on the balance not counterbalanced by counterweights. A digital indicator and four signal generators to receive said electrical signal, two of which signal generators are arranged to produce a signal for actuating the device, to deposit and lift a counterweight when said electrical signal exceeds the limits of a specified range, while the other two signal generators are arranged to produce a control signal when said electrical signal has exceeded the range of a signal equivalent to a counterweight step just completed, by more than the magnitude of that range. First and second delay members are provided whose delay times are longer than the oscillation time of the balance. The first delay member is permanently connected to the input side of the signal generators defining the said specified range, and the second delay member is arranged in the control circuit so as to be operable by the device at the end of each counter weight addition or removal operation to render said device inoperative for the duration of its delay time. The second delay member is also arranged to be rendered inoperative under the influence of a control signal from one of said other signal generators, to thus enable said device to then remain continuously operable.

3,754,612

POWER TRANSMISSION APPARATUS IN A MOTORIZED TWO-WHEEL VEHICLE

Yoshinori Watanabe, Tokyo, and Keigo Yoshida, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

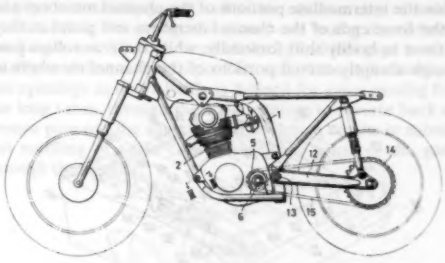
Filed Nov. 3, 1971, Ser. No. 195,180

Claims priority, application Japan, Nov. 6, 1970, 45/97118

Int. Cl. B62m *17/00*

U.S. Cl. 180—33 B 5 Claims

A motorized two-wheel vehicle has an engine supported from the frame via resilient damping members and the vehicle is provided with a power transmission from the engine to a rear wheel driven member such that the drive of the rear wheel is substantially unaffected by engine vibration. The power transmission comprises a drive member driven from the output shaft of the engine by a universal joint, the drive member being coupled to the driven member by a transmission member such as a chain, the driven member being connected at the free end of a fork having its other end pivotably connected to the frame.



3,754,613

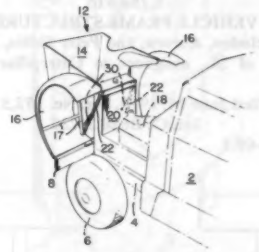
TILT HOOD ASSIST SPRING

Donald L. Stephens, Los Gatos, and Roger Paul Penzotti, Fremont, both of Calif., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Filed Oct. 28, 1971, Ser. No. 193,500

Int. Cl. B62d *25/10*

U.S. Cl. 180—69 C 6 Claims



A spring mounted to assist in the movement of a tilt hood for a motor vehicle. The spring is attached to a vertical, relatively fixed element at a point vertically spaced above the pivot point of the tilt hood and applies a constant upward force on the tilt hood. The spring thus lifts the weight off the pivot pin and further is located such that it will assist in movement of the hood from both the fully closed and the fully open position.

3,754,614

VEHICLE BODY COMPARTMENT PANEL MOUNTING ARRANGEMENT

Ted C. Habas, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

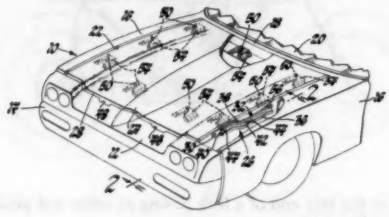
Filed Dec. 2, 1971, Ser. No. 204,157

Int. Cl. B62d *25/10*

U.S. Cl. 180—69 C 5 Claims

A mounting arrangement for a vehicle body compartment panel includes suitable panel and vehicle body mounted members slidably mounting the rear end of the panel adjacent the rear ends of a generally upwardly oriented compartment opening of the vehicle body. The front end of the panel is pivoted transversely of the vehicle body to the front ends of a pair of channel members extending generally longitudinally of the vehicle body and including forward and rearward generally horizontal portions connected by intermediate portions extending downwardly to the rear. Front and rear vehicle body mounted rollers are respectively received within the forward and rearward portions of the channel members to support the front end of the panel during forward translational

movement from a closed position as locking elements that prevent upward opening panel movement from closed position are slidingly disengaged. The front rollers are received within the intermediate portions of the channel members and lift the front ends of the channel members and panel as they continue to bodily shift forwardly, while the rear rollers pass through abruptly curved portions of the channel members to



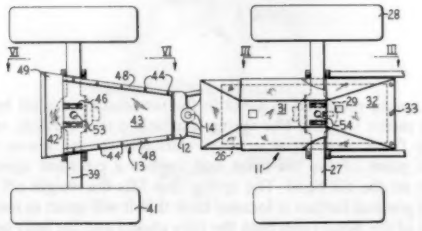
selectively prevent rearward channel member movement when the panel reaches a partially open position. The pivotal connection of the panel to the front ends of the channel members is located above the adjacent confines of the vehicle body when the panel is in the partially open position and the panel is pivotally movable about this connection between the partially open position and a fully open position allowing access to the compartment opening.

3,754,615

VEHICLE FRAME STRUCTURE

Robert G. McIndoo, Aurora, and Peter Sidles, Jr., North Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,513
Int. Cl. B62d *25/20*
U.S. Cl. 180—69.1 **4 Claims**



The front and rear frame sections of an articulated vehicle each comprise a frame attached to the top of an axle and differential housing. A multi-part guard assembly is removably attached to each frame and housing to protect drive train and related components.

3,754,616

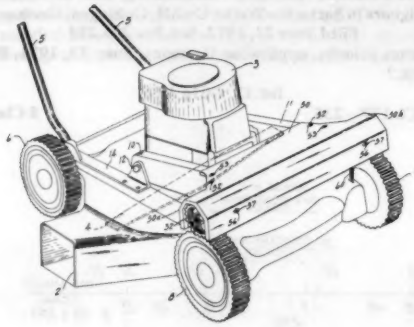
DRIVE MECHANISM FOR MOWERS

Frank C. Watland, Saukeville, Wis., assignor to Ataco Steel Products Co., Grafton, Wis.

Filed Dec. 17, 1971, Ser. No. 209,245
Int. Cl. B62d *51/04*
U.S. Cl. 180—74 **9 Claims**

A lawn mower having a drive mechanism for the wheels of the mower, which mechanism includes a drive shaft and drive cog wheels for engagement with the ground wheels, the drive shaft and drive cog wheels being mounted on a pair of swingable arms whereby the drive cog wheels maintain driving mesh with the ground wheels at all times. The drive mechanism can accommodate ground wheels of different sizes.

The drive cog wheels themselves have a bearing formed integrally therewith at one side, and which bearing is journalled in a bearing seat formed in each of the arms. The arms themselves are held in properly spaced relationship so that their



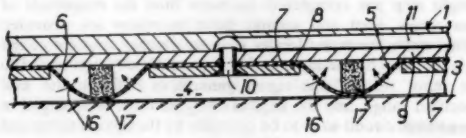
bearing seats properly engage and journal the bearings on the drive cog wheels.

3,754,617

DEVICE FOR PARTITIONING A SPACE BETWEEN TWO BODIES IN RELATIVE MOTION TO EACH OTHER

Louis Duthion, Paris; Michel Jules Jacquot, Suresnes; Charles Gustave Amicel, Carrieres sur Seine; Robert Augustin Chaube, Jumeauville sur Maule, and Francis Marie Jean Croix-Marie, Viry Chatillon, all of France, assignors to Bertin & Cie, Plaisir, France

Filed Feb. 23, 1971, Ser. No. 117,891
Claims priority, application France, Mar. 27, 1970, 11215
Int. Cl. B60v *1/16*
U.S. Cl. 180—121 **10 Claims**



The space between two bodies moving relatively to each other is partitioned in order to form a plurality of overpressured or underpressured fluid cushions. The partitioning is provided by a waffled flexible sheet fixed to one of the two bodies whereby to confine, jointly with the other body, the space therebetween, while at the same time subdividing the same into a plurality of contiguous cells separated from one another by the upstanding waffles on said waffled sheet. The cells are nested into one another, with central cells surrounded by peripheral cells.

3,754,618

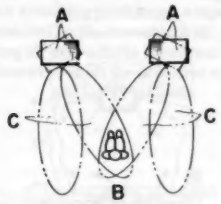
SPEAKER SYSTEM

Kizo Sasaki, Kakegawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,303
Claims priority, application Japan, Nov. 30, 1970, 45/118225
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B **4 Claims**

A speaker system employs a baffle board in the front part of the cabinet with a woofer mounted on said baffle board. A

self-contained auxiliary speaker device covering middle and high-pitch tone ranges is further mounted on the baffle board



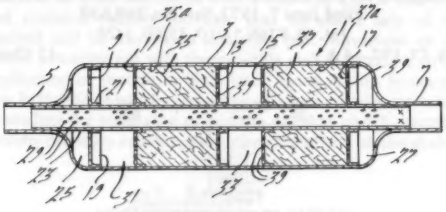
in such a manner that the angle between the auxiliary speaker device and the baffle board can be varied as desired.

3,754,619

LOW BACKPRESSURE STRAIGHT THROUGH MUFFLER

James McCormick, Jackson, Mich., assignor to Tenneco, Inc., Racine, Wis.

Filed June 11, 1971, Ser. No. 152,224
Int. Cl. F01n *1/04*
U.S. Cl. 181—50 6 Claims



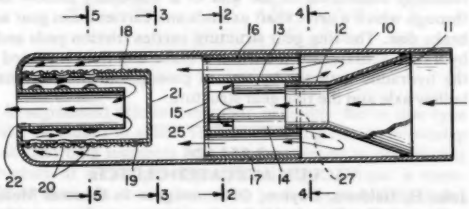
A low backpressure, straight through type sound attenuating muffler, adapted particularly for use with internal combustion engines, comprises a series of spaced annular bodies of sound deadening material, the inner diameters of which define a gas flow path and the side faces of which define chambers within the muffler housing.

3,754,620

MUFFLER

Silvers A. Foster, 20735 Bryant St., Canoga Park, Calif., and Charles F. Smith, 19515 Welby Way, Reseda, Calif.

Filed Aug. 21, 1972, Ser. No. 282,493
Int. Cl. F01n *1/08*
U.S. Cl. 181—53 6 Claims



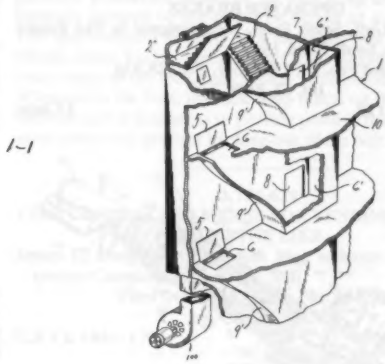
A muffler particularly suited to motorcycles includes a cylindrical casing incorporating a tube assembly comprised of long and short tubes circumferentially spaced about an inner wall portion of the casing. A deflector plate is positioned in the casing to receive and deflect backwardly gases passing through the short tubes. The gases are then caused to reverse again and pass through the long tubes which communicate with the other side of the deflector pipe. A closed end cylindrical pipe is coaxially positioned in the outlet and is of smaller diameter than the casing, the closed end facing the outlets of the long tubes. The open end of the cylindrical pipe turns inwardly to define a short pipe. The wall of the cylindrical pipe has openings so that a baffle is defined for gases passing from the long tubes, through the wall openings to reverse back and thence pass out the short pipe. The design results in substantial muffling of noise carried along the route of the gasses through the muffler.

3,754,621

FIRE ESCAPE APPARATUS

Shu-Lien Liou, Taiwan, China, assignor to Chin-Chih Chuang, Taiwan, China

Filed Mar. 17, 1972, Ser. No. 235,559
Int. Cl. A62b *3/00*
U.S. Cl. 182—49 7 Claims



Fire escape apparatus comprising a tightly sealed shaft attached to a building wherein self-closing escape channels are provided to connect each floor of the building downwardly with the shaft, and a main exit is located at the bottom of the shaft with forced draft fan or natural up-draft opening being provided to maintain a higher pressure head in the shaft than that of the building to prevent fire from traveling through the escape channel and thus ensure safety pf the escaper.

3,754,622

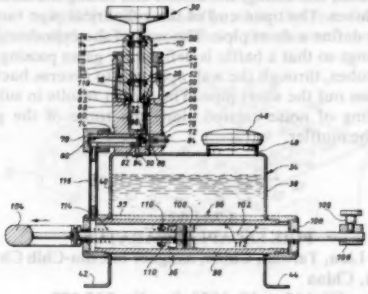
METHOD AND APPARATUS FOR LUBRICATING ROTATING BEARINGS

Franz Brichta, Weilmodrof, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Ernst-Sachs-Str., Germany

Filed Mar. 23, 1971, Ser. No. 127,141
Claims priority, application Japan, Mar. 24, 1970, 45/27526
Int. Cl. F16n *3/00*
U.S. Cl. 184—1 D 14 Claims

Method and apparatus for lubricating rotating bearing shafts. The lubricant is pumped under pressure into a first

opening in the bearing housing located in front of the shaft bearing, until the lubricant reaches a second opening located



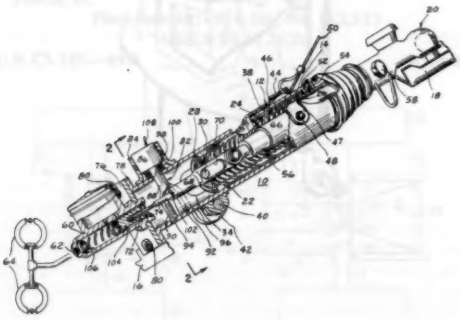
behind the shaft bearing. Subsequently the lubricant is removed under suction.

3,754,623

TRAILER BACK-UP BRAKE RELEASE FOR SURGE OPERATED BRAKES

Michael Earl Gatt, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 24, 1972, Ser. No. 228,936
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **1 Claim**



A surge brake actuator which includes two relatively movable members, one connected to a towing vehicle and the other connected to a trailer, is held in an extended position by spring means which is collapsible upon relative movement between the vehicle and trailer. Trailer brake applying means, including a hydraulic brake master cylinder, is operatively connected to one of said members to respond to relative movment between said members for applying the trailer brakes. A mechanism responsive to a backing maneuver of the vehicle and trailer is operatively connected to said brake applying means for rendering said brake applying means ineffective to apply said trailer brakes.

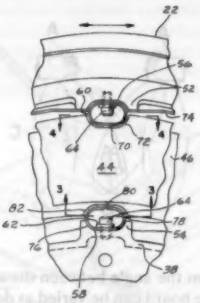
3,754,624

FLEXIBLE KEY FOR DISC BRAKE

Wendell E. Eldred, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 17, 1971, Ser. No. 181,396
Int. Cl. F16d *55/36*
U.S. Cl. 188—71.5 **6 Claims**

A disc brake having a plurality of force transmitting flexible key members interposed in circumferentially spaced-apart relationship between a wheel and rotor disc and/or stator disc and fixed support wherein the key members are adapted to



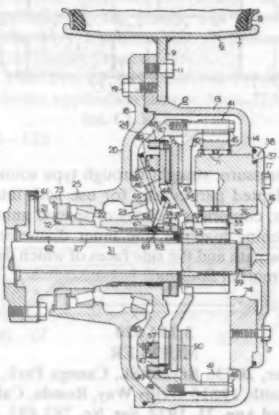
flex under force load to thereby distribute the force load substantially equally between the plurality of key members.

3,754,625

VEHICLE FINAL DRIVE WITH PLANETARY GEARING AND FRICTION BRAKE

James W. Voth, and Albert J. Speck, both of Springfield, Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 7, 1972, Ser. No. 260,630
Int. Cl. F16h *57/10, 35/00, 1/28*
U.S. Cl. 192—4 A **11 Claims**



A planetary final drive and brake are incorporated within a wheel hub of a land vehicle with the ring gear structure nonrotatably connected to the end of a stationary hollow axle through which a drive shaft extends and carries a sun gear and brake disc. The ring gear structure carries friction pads and a hydraulic actuator for the friction brake and fluid is routed to the hydraulic actuator by way of passages in the stationary hollow axle and the ring gear structure.

3,754,626

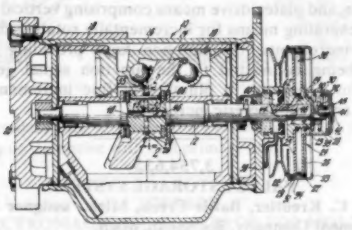
VACUUM ACTUATED CLUTCH

John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1972, Ser. No. 282,834
Int. Cl. F16d *15/00, 25/12*
U.S. Cl. 192—38 **3 Claims**

A vacuum actuated clutch including a housing defining a closed space having a movable wall, the wall moving in response to the application of vacuum to the closed space.

The movable wall is connected to a stationary wall by an annular flexible member permitting movement of the wall in response to the vacuum. A continuously driven pulley is keyed to a shaft which contains an axially extending aperture slidably receiving a clutch actuating pin having a tapered end while its other end is connected to the movable wall. A one-way clutch assembly including an expandable inner race ring is concentrically disposed about the shaft for selective engagement with a



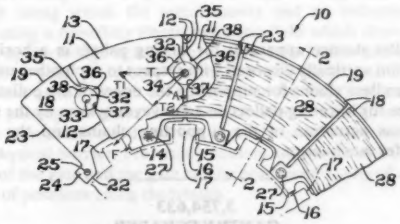
driven member. The shaft contains a diametrically extending aperture in axial alignment with a one-way clutch assembly and contains radially movable pins on either side of the tapered end of the clutch actuating pin. Movement of the clutch actuating pin with the movable wall in response to the application of vacuum to the closed space in turn forces the pins in the diametrically extending aperture radially outwardly expanding the inner race ring of the one-way clutch assembly thereby drivingly engaging the driven member with the shaft.

3,754,627

SEGMENTED DISC ELEMENT

Marvin E. Hotchkiss, Troy; Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,981
Int. Cl. F16d *13/64*
U.S. Cl. 192—107 R **8 Claims**



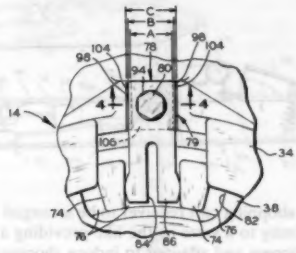
A segmented friction member assembly for a disc-type brake or clutch in which segmental facing members overlap heat-absorbing segments keyed to the rotating or nonrotating structure at a configured peripheral edge. Torque is transmitted from the facing members to the segments by interlocking members extending between opposing facing members and engaging recesses in the side edges of the heat-absorbing segments. Slanted surfaces of the recesses direct the components of the torque force being transmitted in predetermined directions so as to minimize the forces on the heat-absorbing segments tending to rotate the segments in the friction member assembly.

3,754,628

LOCK STRAP MOUNTING ADJUSTMENT FOR CLUTCH ADJUSTING RING

William Gene Hildebrand, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed June 22, 1972, Ser. No. 265,408
Int. Cl. F16d *13/75*
U.S. Cl. 192—111 B **8 Claims**



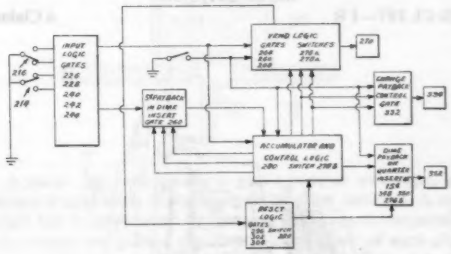
An improved arrangement is provided for mounting an adjusting ring lock strap with respect to a clutch cover to preclude premature failure of the lock strap after it has been properly secured to the cover by means of a threaded bolt. The improvement consists of a mounting slot formed in the clutch cover having tapered side walls engageable with the inner edges of the lock strap so that, in response to application of torque to the bolt, the lock strap reacts on the tapered side walls in such a manner as to provide positive frictional engagement which will prevent backing-out of the bolt.

3,754,629

COIN CONTROLLED MEANS FOR VENDING MACHINES AND THE LIKE

James C. Douglass, Crestwood, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Filed Dec. 6, 1971, Ser. No. 204,988
Int. Cl. G07f *9/04*
U.S. Cl. 194—1 N **21 Claims**



A versatile coin controlled circuit for use in vending and other coin operated machines, said circuit including relatively simple means for establishing a vend price and for simultaneously controlling the amount refunded for each deposit in excess of the vend price. The subject improved control circuit also includes novel logic circuitry operable under control of coin actuated switches, novel means for accumulating amounts deposited including use of integrated circuits, novel means for timing certain circuit and machine operations, and novel circuitry in the input, vending, and change pay-out portions of the circuit. The subject circuit represents a new generation of coin controlled circuits and is simpler and more compact than known circuits used for the same or similar purposes, and it contains far fewer parts and components.

3,754,630

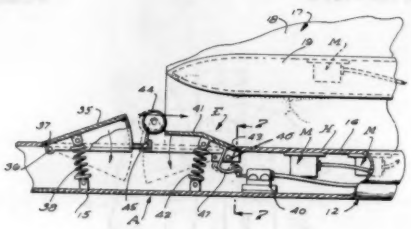
SHOPPING CART RECEIVING MEANS

Donald J. Gilker, 3301 N. Lowry Rd., Los Angeles, Calif.

Filed Mar. 13, 1972, Ser. No. 234,236

Int. Cl. G07f *1/06*

U.S. Cl. 194—4 **9 Claims**



A unitary shopping cart receiver to be arranged in predetermined proximity to a store or the like providing a plurality of carts for shoppers and adapted to induce shoppers to deposit shopping carts in the receiver when their use thereof is terminated. The receiver involves an elongate chute with parallel sides, open front and rear ends and into which shopping carts can be manually engaged for longitudinal movement and storage therein. The receiver has a gate means at its rear end to releasably return carts deposited therein. The receiver next has a dispenser operable to dispense a prize or reward each time a cart is advanced into engagement in the receiver at the front end thereof. Finally, the receiver has receiving means at its front end to permit the advance of a cart into engagement in and to prevent the withdrawal of a cart or carts from the front end of the receiver and related to the dispenser to operate the dispenser each time a cart is advanced into engagement in the receiver.

3,754,631

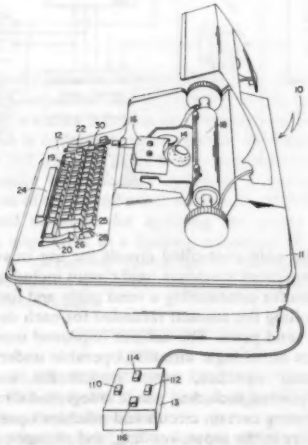
POSITIONING TYPEWRITER

An Wang; Ge Yao Chu, both of Lincoln, and Edward S. Wu, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Tewksbury, Mass.

Filed Apr. 1, 1971, Ser. No. 130,281

Int. Cl. B41j *3/50*

U.S. Cl. 197—1 R **4 Claims**



A writer selectively operable in an alpha-numeric symbol printing mode and a positioning mode. The writer includes a horizontally movable type head having a plurality of corresponding alphaenumeric printing symbols, operable in response to printing signals to print the symbols and horizontally movable in response to horizontal spacing function signals; and a platen rotatable in response to vertical spacing function signals. Type head drive means are provided for incrementally horizontally moving the type head in fine increments, the alpha-numeric spacing increments being an integral multiple thereof, and platen drive means are provided for incrementally rotating the platen in fine increments. In general, this is done by control means for operating the type head comprising horizontal function signal generating means for incrementally horizontally moving the type head in fine increments, and platen drive means comprising vertical function signal generating means for incrementally rotating the platen in fine increments, the function keys providing function signals being connected to the function signal generating means for generating a plurality of fine increment signals equal to an alpha-numeric increment.

3,754,632

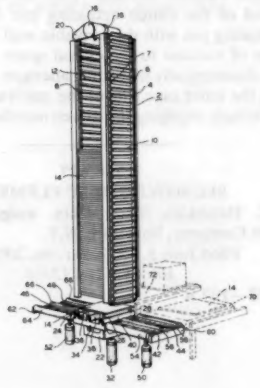
PALLET STORAGE SYSTEM

Richard C. Kreutter, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 9, 1970, Ser. No. 87,721

Int. Cl. B65g *47/00*, *15/00*

U.S. Cl. 198—20 **1 Claim**



Pallet storage apparatus for storing pallets in a horizontal position vertically disposed with respect to each other utilizing two endless chains for supporting the edges of the pallets with means for lowering pallets on a conveyor system by the simultaneous actuation of the supporting chains and the pallet transfer mechanism.

3,754,633

GANTRY SCRAPER

Rene Bluntzer, Thann, France, assignor to Ameco S.A., Kingersheim, France

Filed Mar. 31, 1971, Ser. No. 129,770

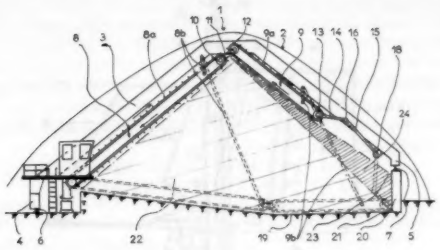
Claims priority, application France, Mar. 31, 1970, 7011804

Int. Cl. B65g *59/00*

U.S. Cl. 198—36 **2 Claims**

This gantry scraper adapted to transfer or pick up material from a heap or hook in a silo or like enclosure is mounted above a pit of said silo or the like and adapted to travel therealong; it comprises a pair of scraper arms, namely a primary arm and a secondary arm, mounted to the gantry structure and each provided with an endless conveyor chain, the upper ends of said arms being hingedly interconnected; pen-

dular-motion means are provided for connecting the lower end of the secondary arm to the gantry structure and enable said secondary arm to move to a position in which it is substantially co-extensive with said primary arm.



3,754,634

ELECTROMAGNETIC CONVEYOR FOR MOLTEN METAL

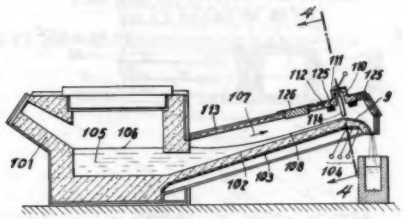
Hans-Erwin Gerbig, Huckeswagen, and Axel Von Starck, Remscheid, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Continuation-in-part of Ser. No. 821,341, May 2, 1970, abandoned. This application Oct. 1, 1970, Ser. No. 77,061

Claims priority, application Germany, Sept. 14, 1968, P 17 28 231.4; Oct. 3, 1969, P 19 49 982.2

Int. Cl. B65g *49/00*

U.S. Cl. 198—41 **15 Claims**



An electromagnetic conveyor for drawing molten metal from a melting or holding vessel of the type having an inclined trough along which the metal moves and an inductor for generating a travelling electromagnetic field which draws the metal up the trough against gravity. Near the higher end of the trough a gate preferably having an adjustable position is mounted in the trough for controlling the depth of molten metal passing the gate. In a first embodiment, the gate comprises an insulating rail and in a second embodiment the gate is a physical barrier. Preferably heaters are mounted on both sides of the gate and the gate can be positioned at any of a plurality of positions along the trough.

3,754,635

CAN HANDLING APPARATUS

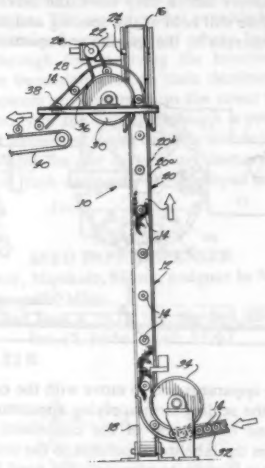
Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.

Filed Jan. 7, 1972, Ser. No. 216,122

Int. Cl. B65g *17/46*

U.S. Cl. 198—41 **11 Claims**

Disclosed is a can handling apparatus which has a first station for handling can bodies and which may include means for advancing the can bodies along a predetermined conveying path with the axis of the can bodies transverse to such conveying path. The cans are removed from the first conveying path by a rotating transfer wheel which has magnetic means at circumferentially spaced locations thereon. Each can is picked off from the conveying path and rotated about the transfer wheel and then removed by means of a stripper bar or blade so it can be deposited onto a second predetermined conveying path for further conveying of the can. Two or more of such transfer wheels may be utilized in any given can handling apparatus.



3,754,636

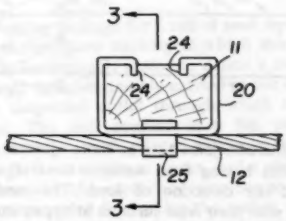
CONVEYOR BELT CLIP

Max W. Boy, Byram, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 7, 1972, Ser. No. 223,958

Int. Cl. B65g *15/30, 19/10;* F16l *3/24*

U.S. Cl. 198—175 **3 Claims**



A metal clip, with means to grip a rope or wire rope, and means to grip slabs of metal, wood or other material. A conveyor belt is constructed by fastening said clips to two parallel wire ropes, and joining together each of a pair of such clips, one on each rope, by means of slabs which are gripped by the said metal clips.

3,754,637

CLAMPING MEANS FOR CONTAINER LABELING AND STRIP-APPLYING APPARATUS

Sidney T. Carter, Shrewsbury, and Florian J. Jolda, East Douglas, both of Mass., assignors to A-T-O Inc., Cleveland, Ohio

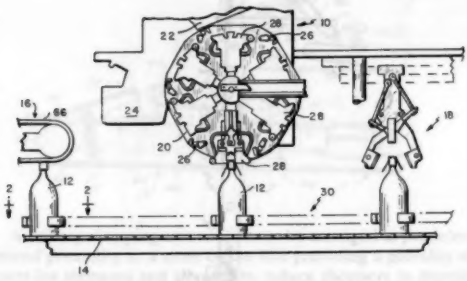
Filed Feb. 12, 1971, Ser. No. 114,952

Int. Cl. B65g *19/00*

U.S. Cl. 198—179 **4 Claims**

The combination with apparatus for applying labels to the sides of containers and an apparatus for applying sealing strips to the tops of containers; of a clamp-carrying conveyor supported in parallel relation to an extension of a container-con-

veyor extending from the apparatus for applying labels through the apparatus for applying sealing strips and pivotally mounted, spaced pairs of clamping jaws on the clamp-carrying conveyor adapted to be brought successively into engagement with the containers before they leave the label-applying apparatus and while still held at the spacing and in the orientation imparted thereto by the spacing and spotting mechanism



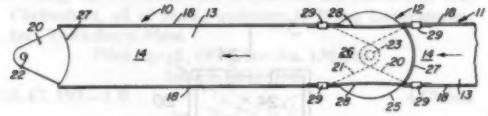
in the labeling apparatus and to move with the container-conveyor toward the sealing strip-applying apparatus to maintain the spacing and orientation of the containers during their movement from the labeling apparatus to the sealing strip-applying apparatus thereby to eliminate the need for additional spacing and spotting mechanism in conjunction with the sealing strip-applying apparatus and to shorten the overall length of the combined apparatus.

3,754,638

CONVEYOR JUNCTION

Dennis E. Mead, Cazenovia, N.Y., assignor to Lipe Rollway Corporation, Liverpool, N.Y.

Filed Apr. 27, 1972, Ser. No. 247,966
Int. Cl. B65g 27/06
U.S. Cl. 198—220 A **17 Claims**



A conveyor junction joins two or more vibrator-powered conveyor modules having feed surfaces covered with pile inclined toward the direction of feed. The modules are pivotally joined with their feed surfaces at approximately the same height and so that each module is free to vibrate. A circular transfer surface is disposed between the feed surfaces of the joined modules concentric with the pivotal joint, and the transfer surface has pile inclined toward the direction of feed of a receiving module.

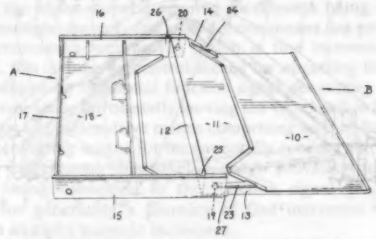
3,754,639

CASSETTE CASE

Jobst Ulrich Gellert, Toronto, Ontario, Canada, assignor to Mold Masters Limited, Downsview, Ontario, Canada

Filed Apr. 18, 1972, Ser. No. 245,109
Int. Cl. B65d 43/20, 85/67; A45c 11/00
U.S. Cl. 206—1 R **2 Claims**

A storage container for a tape cartridge having a separate bottom section and a separate pouch-like cover hinged to the bottom part and swingable between an open and closed position. The bottom part carries each pivot pin on which the separate pouch-like part swings. Each pivot pin is carried on oppositely disposed side walls and guided, during assembly, by a complemental tapering groove into a pin hole formed in the respective side wall of the cover, spreading the side walls of the bottom section so that when the pins and pin holes are registered the pins will snap into the respective pin hole. The cover side walls are provided with outwardly projecting ribs adjacent the pin holes which engage in groove in the side wall



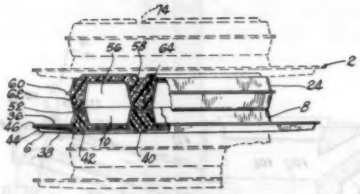
when the cover is in the closed position to retain the cover closed and against the end edges of the side wall to support the cover in a substantially horizontal plane when held in a person's hand.

3,754,640

INSULATED TRAY AND COVER THEREFOR

John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed July 9, 1970, Ser. No. 53,546
Int. Cl. A45c 11/20
U.S. Cl. 206—4 **4 Claims**



This application discloses an insulated tray and cover therefor. The tray is provided with food holding receptacles having insulated bottom and side walls while the cover has coextensive insulated spaces so that when the cover is placed on the lid completely insulated food holding compartments are formed. Interengaging elements are formed on the trays and covers so that seals are formed and alternating trays and covers may be placed on one another to form a stack.

3,754,641

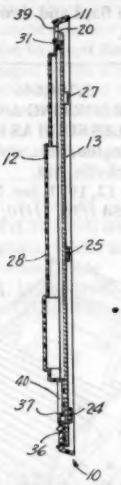
WATCH BAND DISPLAY PACKAGE

Harold H. Koch, 474 Warren St., Westbury, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,567
Int. Cl. B65d 25/54, 73/00
U.S. Cl. 206—45.34 **4 Claims**

A watch band display package consisting of a generally rectangular injection molded frame section completely devoid of undercuts. A pressure molded transparent plastic section interlocks positively to the injection molded frame despite the absence of undercuts. A printed and die cut card member interlocks with the molded frame section and the transparent plastic section to secure and display the package contents. The watch band displayed in the package is secured in the molded transparent plastic section by the card element and can be easily removed and replaced for checking the fit to a watch and for close inspection by the prospective purchaser. A set of spring bars is retained in a portion of the transparent plastic cover which is positioned in contact with a cross bar to

prevent the spring bars from being removed when the card is removed. The spring bars may only be removed from the



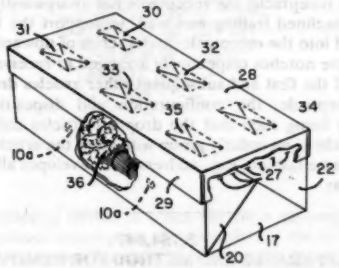
transparent cover by forcibly removing the transparent cover from the frame.

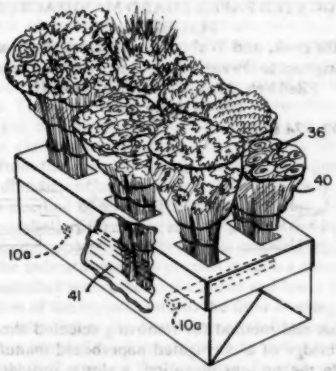
3,754,642

WATERPROOF CONTAINER FOR PERISHABLE PRODUCTS

David L. Stidolph, P.O. Box 158, Salinas, Calif.

Filed Aug. 20, 1971, Ser. No. 173,421
Int. Cl. B65d *5/50, 85/00*
U.S. Cl. 206—45.14 **3 Claims**





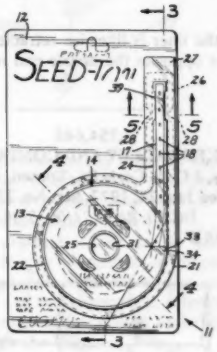
A waterproof container for shipping perishable products such as cut flowers and for displaying such products for sale or inspection after they arrive at their destination. The body and cover of this container are each made of one piece of wax impregnated cardboard or corrugated paper stock scored along fold lines so that both body and cover are easily folded into shape. Suitable fastening means are provided to hold these in their folded shapes. The cover is also provided with scoring lines at predetermined areas thereof where holes are to be formed therethrough for receiving the bunches of flowers after they have been delivered to their destination. The cut stems of the flowers are inserted into the cover holes and extend into the body of the container which is provided with a predetermined amount of water of sufficient depth so that the bottom portions of the cut flowers are immersed therein to keep the flowers fresh while they are displayed for sale.

3,754,643

SEED TAPE DISPENSER

Russell G. Foster, Mankato, Minn., assignor to Northrup King & Co., Minneapolis, Minn.

Filed June 9, 1972, Ser. No. 261,234
Int. Cl. B65d *75/40, 85/67*
U.S. Cl. 206—52 R **11 Claims**



A dispensing package for a roll of seed tape consisting of a plasticized cardboard backing to which a transparent cover member is hermetically sealed to define a reel cavity. A reel for the seed tape is rotatably carried in the cavity, which includes a tangential outlet through which the tape can be dispensed. The reel consists of a flat circular carboard member, having suitable printed indicia on one face for viewing through the transparent cover, and a plastic spool which cooperates with the cardboard member to carry the tape. Means are provided for locking the reel in a predetermined position to preclude its rotation due to hygroscopic expansion and contraction of the tape, and to thereby maintain the printed indicia in an upright position.

3,754,644

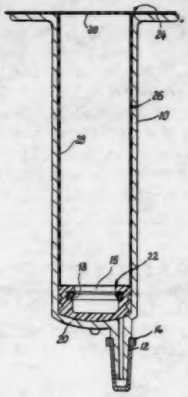
STERILE PACKAGE CONTAINING A SYRINGE CYLINDER OF A DISPOSABLE INJECTION SYRINGE HAVING A PISTON ROD DETACHABLE FROM THE PISTON

Heinz Hampel, Schwabisch Gmund-Lindach, Im-Osterlang, Germany, assignor to B. Braun Melsungen Aktiengesellschaft, Melsungen, Germany

Filed July 19, 1972, Ser. No. 273,163
Claims priority, application Germany, July 26, 1971, P 71 28 705.3
Int. Cl. A45c *11/00;* **A61m** *5/30*
U.S. Cl. 206—63.2 R **3 Claims**

A sterile package is disclosed which comprises a disposable injection syringe cylinder which has a nozzle at one end, a piston located at its terminal position within the cylinder at the nozzle end thereof and a liner for the interior wall of the

cylinder behind the piston to maintain the interior of the cylinder in a sterile condition. When the piston is retracted with an attachable piston rod to introduce a fluid into the syr-



inge cylinder, the liner is likewise retracted. The end of the syringe cylinder opposite the nozzle end may be sealed by a removable foil.

3,754,645

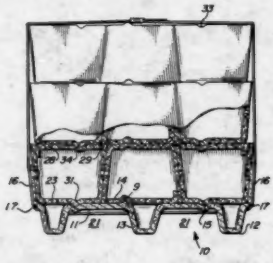
INTERLOCKED PALLET AND CONTAINER SYSTEM

Oliver B. Kilroy, 5 Calle Corta St., Tucson, Ariz.

Filed Jan. 24, 1972, Ser. No. 220,329

Int. Cl. B65d *71/00, 85/62*

U.S. Cl. 206—65 B **11 Claims**



This specification discloses an interlocked pallet and container system comprising a pallet including a rectangular horizontal platform formed with three rows of legs with three legs in each row. These legs define passages for the entry of the tines of a fork lift in any of four directions. Joined to opposite side edges of the platform by integral hinges are two flaps, each having a plurality of lugs which extend inwardly when the flaps are in an upraised position. Opening onto the upper face of the platform are two grooves which are parallel to the side edges which carry the flaps.

A plurality of containers are assembled on the pallet. Each container is rectangular in shape and comprises a bottom formed with a depending rib, upwardly diverging side walls, two opposed ones of which are formed with a plurality of apertures, and a top hingedly connected to the upper edge of one side wall. The top is formed with an outwardly opening groove that is parallel to the rib on the bottom.

When the containers are assembled on the pallet, the flaps are folded upwardly and the lugs thereon are received in the apertures in the walls of the containers in two of the outer sides of the lower tier. The ribs on these containers are fitted in the grooves in the pallet platform. Additional tiers of containers are superimposed on the lower tier with the ribs on the bottoms of the containers in one tier being received in the grooves in the tops of the containers in the tier therebelow. A pair of straps are passed around the assembled containers and pallet passing over the flaps and through the passages on the underside of the pallet.

3,754,646

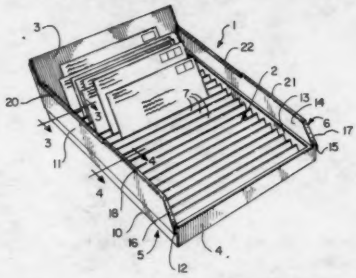
RECEPTACLE FOR SORTING AND HANDLING FLAT ARTICLES SUCH AS LETTERS

Seymour Henig, Kensington, Md., assignor to John I. Thompson & Company, Rockville, Md.

Filed May 12, 1971, Ser. No. 142,599

Int. Cl. B65d *1/36, 11/10;* **A47b** *63/00*

U.S. Cl. 206—73 **9 Claims**



A receptacle which can be employed as a tray for collecting groups of thin generally flat articles, typically letters, during sorting and which can be combined with an identical but inverted receptacle to provide a complete container in which the collected group of articles can be transported. Constructed to be advanced by a conveyor beneath a series of article retaining stations, with the articles dropped one by one into the receptacle, the receptacle has an upwardly and rearwardly inclined trailing end wall, to support the first article dropped into the receptacle, and a series of upwardly opening transverse notches respectively arranged to receive the lower edges of the first and subsequent other articles dropped into the receptacle, the configuration and disposition of the notches being such that the dropped articles collect in the receptacle as an orderly group with all of the articles oriented in the same fashion, e.g., addresses of envelopes all facing the same way.

3,754,647

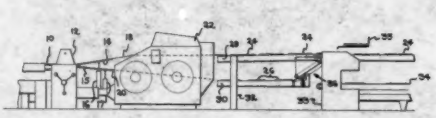
APPARATUS AND METHOD FOR REMOVING SELECTED SHEETS FROM THE LOWER BRIDGE OF A CORRUGATED PAPER BOARD MANUFACTURING MACHINE

Frank J. DiFrank, and Walter R. Skudlarek, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 22, 1972, Ser. No. 228,018

Int. Cl. B07c *3/02*

U.S. Cl. 209—74 R **12 Claims**



Apparatus and method for removing selected sheets from the lower bridge of a corrugated paperboard manufacturing machine. In the present invention, a slot is provided in the upper bridge of a corrugated paperboard manufacturing machine. Under the slot, an inclined sorting conveyor is positioned at a point adjacent the lower bridge of the corrugated

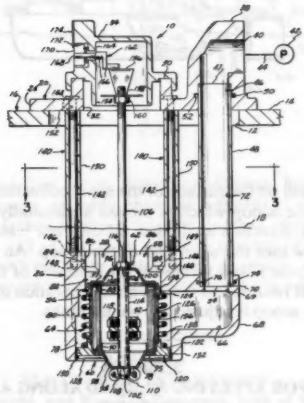
machine. A hold-down conveyor is also mounted on the upper bridge adjacent to the sorting conveyor such that sheets of corrugated paperboard are drivingly engaged between the two conveyors. When defective sheets of paperboard appear on the lower bridge, the machine operator activates a lever which raises fingers into position to divert the defective sheets. The defective sheets are engaged by the sorting conveyor and the hold-down conveyor and transported through the slot in the upper bridge. Sheets so removed from the stream of production are stacked and stored for disposal in a rack positioned over the upper bridge of the machine.

3,754,648

FLUID FILTERING DEVICE

Carl A. Brown, Birmingham, Mich., assignor to Parkin-Hannifin Corporation, Cleveland, Ohio

Filed Oct. 1, 1971, Ser. No. 185,583
Int. Cl. B01d *35/14*
U.S. Cl. 210—90 **13 Claims**



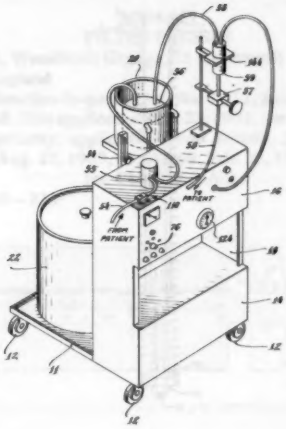
A fluid filtering device in which the filter element can be changed without interrupting the operation of the device and which includes means for directing fluid around opposite ends of the filter element to operate as a bypass when the filter element becomes unduly clogged. The filtering device also is provided with an indicator housing portion mounted to the top plate of a fluid reservoir and a plurality of support rods extending downwardly into the reservoir to support a filter housing portion at a position below the level of the fluid in the reservoir. The filter housing portion has a chamber opening at the top and bottom of the housing portion and within which the filter element is removably supported for filtering fluid flowing from the chamber openings to an outlet passage which in one embodiment of the invention terminates in a boss that supports one end of an upright tubular member disposed in a spaced parallel arrangement with respect to the support rods. The opposite upper end of the tubular member is received in a boss of the indicator housing portion in such a manner that the tubular member is secured to the upper and lower bosses upon connection of the support rods to the filter housing portion. In another embodiment the housing portion is provided with an outlet port adapted for connection to an outlet conduit to extend through the top of the reservoir. In both embodiments the indicator housing portion mounts an indicating device operatively coupled to the filter element to provide a visual indication of the filtering condition of the filter element.

3,754,649

ARTIFICIAL KIDNEY MACHINE

Paul Palubniak, and Sung C. Lee, both of Bridgeport, Conn., assignors to LPT Corp., Bridgeport, Conn.

Filed Nov. 17, 1971, Ser. No. 199,437
Int. Cl. B01d *31/00*
U.S. Cl. 210—103 **8 Claims**



A batch-type artificial kidney machine especially adapted for home use and operation by non-professionals. The machine is automatic in operation with all functions controlled by a single four-position switch.

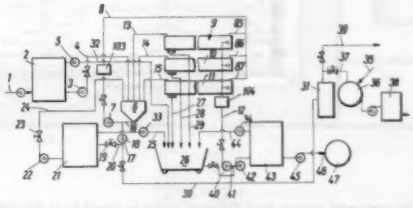
The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,754,650

METHOD FOR THE DIALYSIS OF MILK, AND MORE PARTICULARLY METHOD FOR PRODUCING ALBUMIN FROM MILK AND WHEY, AND APPARATUS FOR CARRYING OUT THIS METHOD

Kurt Kautz, and Otto Stahnke, both of Dahlenburg, Germany, assignors to Molkerergenossenschaft Dahlenburg EGmbH, Dahlenburg, Germany

Division of Ser. No. 94,642, Dec. 3, 1970. This application May 11, 1972, Ser. No. 252,307
Claims priority, application Germany, Jan. 23, 1970, P 20 02 985.0; Dec. 10, 1969, P 19 61 885.0
Int. Cl. B01d *31/00*
U.S. Cl. 210—152 **7 Claims**



A method for producing albumin from milk and whey by the dialysis of skimmed milk or whey, wherein the skimmed milk or whey is concentrated prior to the dialysis, and an apparatus for carrying out this method, and comprising a dialytic device.

3,754,651

FILTER

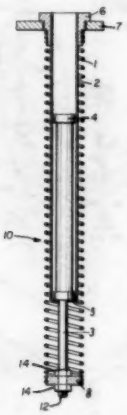
Rudolf Lannoch, Teplitzer Str. 38, Berlin, Germany

Filed Mar. 19, 1971, Ser. No. 125,975

Claims priority, application Germany, Mar. 26, 1970, P 20 16 001.4

Int. Cl. B01d 39/02

U.S. Cl. 210—106 7 Claims



A fluid filter consisting of a helical or spirally wound wire element, a fluid guide pipe disposed within the center of the element and containing a piston-like member responsive to the pressure of the fluid connected to one end of the helical element. When the fluid is pumped, the pressure forces the piston-like member up within the fluid guide pipe, and the helical filter winding is contracted so as to provide effective filtering of dirt and other foreign particles. When no fluid is being pumped and no pressure exists, the piston-like member forces the helical winding into an extended position so as to cause the collected dirt and residue to be cleaned from the winding.

3,754,652

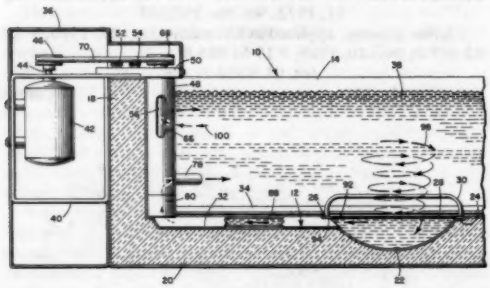
FILTER PUMP SYSTEM FOR LIQUID CONVECTION COOKER

Dan R. Franklin, 12830 Lacy Dr., Silver Spring, Md.

Filed Oct. 26, 1972, Ser. No. 301,075

Int. Cl. B01d 35/28

U.S. Cl. 210—167 9 Claims



The present pump and filter system is used in a liquid convection cooker to create a vortex which causes circulation of the liquid in the tank or vat of the cooker in such manner as to achieve substantially uniform liquid temperature and to prevent the liquid from becoming laden with food particles. The pump is positioned directly in the vat along one wall thereof and is arranged to draw liquid from the periphery of a well located centrally in the bottom of the vat. The liquid is returned to the vat horizontally through a nozzle spaced above the bottom of the vat and at an angle with respect to the vat walls. The vortex is created, at least in part, by the pumping action and the shape of the components. Those parts of the pump and filter which actually contact the liquid can be readily removed from the vat, disassembled for cleaning and can even be sterilized. There is no necessity for emptying the vat before removing either the pump or the filter.

3,754,653

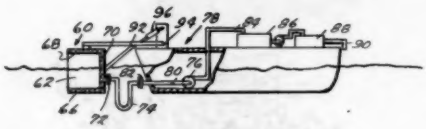
APPARATUS AND METHOD FOR COLLECTION OF OIL FROM SURFACE OF THE SEA

Sam M. Verdin, 2600 Breton Dr., Marrero, La.

Continuation-in-part of Ser. No. 46,963, June 17, 1970, abandoned. This application Apr. 21, 1971, Ser. No. 136,147

Int. Cl. B01d 21/00; E02b 15/04

U.S. Cl. 210—197 6 Claims



An oil spill on the surface of the sea is collected by means of a funnel-like scoop which is moved horizontally through the water in a direction such that oil and sea water, including waves, flow into the open end of the scoop. An oil-rich mixture flows over a weir located at the apex end of the scoop and the water is returned to the sea after separation of the oil. The trim of the scoop is adjusted by ballast tanks.

3,754,654

DEVICE FOR APPLYING A LIQUID ALONG A LINE ON A SUPPORT

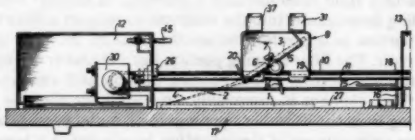
Ethel Barbro Louise Nybom, Kristianstad, Sweden, assignor to AB Instrumenta, Lund, Sweden

Filed Apr. 7, 1971, Ser. No. 131,904

Claims priority, application Sweden, Apr. 13, 1970, 4960/70

Int. Cl. B01d 15/08

U.S. Cl. 210—198 C 7 Claims



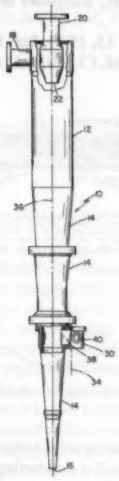
Apparatus for linear application of a liquid along the surface of a plate utilized in conjunction with chromatographic investigations includes a pipette arranged to be moved back and forth along the plate. The pipette is mounted pivotally in order that a capillary liquid application prong thereon can be maintained in contact with the surface of the plate when moving in one direction while it is raised from the surface when the pipette is moved in the opposite direction.

3,754,655

VORTEX-TYPE SLURRY SEPARATOR

Edwin P. Troland, Hingham, Mass., assignor to Bird Machine Company, South Walpole, Mass.

Filed Feb. 7, 1972, Ser. No. 224,011
Int. Cl. B04c 5/18
U.S. Cl. 210—209 5 Claims



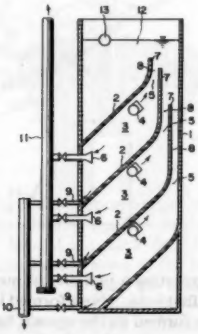
In a vortex-type slurry separator dilution liquid is introduced through an eddy chamber adjacent the separator body, the chamber having a transfer opening which extends through the wall of the body to allow overlap of a dilution liquid body with the outer vortex in the separator, so that the liquid will pass smoothly into the outer vortex by eddy current transfer.

3,754,656

FLOATATION SEPARATORS

Tadao Horiguchi, and Katsumi Tagomori, both of Yokohama, Japan, assignors to Kurita Water Industries, Ltd., Hodogaya-ku, Yokohama-shi, Japan

Filed Sept. 14, 1971, Ser. No. 180,429
Claims priority, application Japan, Nov. 17, 1970, 45/101237; Sept. 28, 1970, 45/84797; Nov. 12, 1970, 45/99670; Nov. 13, 1970, 45/99951; Nov. 14, 1970, 45/100333; Nov. 17, 1970, 45/101234
Int. Cl. B03c 5/02
U.S. Cl. 210—221 15 Claims



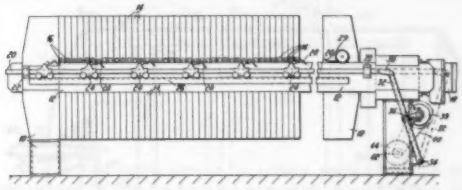
A floatation separator comprises a floatation tank containing a plurality of vertically spaced apart parallel inclined plates for defining a plurality of parallel inclined chambers in which impurities are separated from the water to be treated by floatation. Each inclined chamber is provided with an inlet port for the water to be treated near its upper end and a discharge port for the treated water near the lower end thereof intermediate the upper and lower inclined plates of a chamber.

3,754,657

FILTER PRESSES

John Harp, Woodlands Grange, 25 Caverswall Rd., Stoke-on-Trent, England

Continuation-in-part of Ser. No. 1,712, Jan. 9, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,699
Claims priority, application Great Britain, Jan. 16, 1969, 2,533/69; Aug. 27, 1969, 42,633/69; Feb. 26, 1971, 5,506/71
Int. Cl. B01d 25/00
U.S. Cl. 210—230 9 Claims



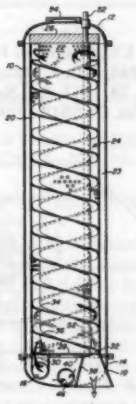
There is described a propulsion mechanism for moving trays along a filter press, the mechanism consisting of one or more bars which may be arranged at the side or sides of or above the press and which are mounted for reciprocation lengthwise of the press. The bars may be reciprocated by a mechanical linkage or a fluid actuator and carry tray-engaging elements such that reciprocation of the bar or bars effects sliding movement of one or more trays along the press. The tray engaging elements may be spring-loaded to urge them into tray-engaging positions.

3,754,658

PULP THICKENER HAVING TWO VERTICAL PERFORATED SCREENS WITH NONMOVING SPIRALLY WRAPPED BLADES THEREBETWEEN

Hjalmar Messing, deceased, late of 7 Church St., Fort Fairfield, Maine (by Mary Agnes Messing, executrix)

Filed Oct. 19, 1970, Ser. No. 81,867
Int. Cl. D21d 5/02; B01d 25/20
U.S. Cl. 210—304 9 Claims



A pulp thickener characterized by a vertically oriented housing containing concentric perforated tubular screens

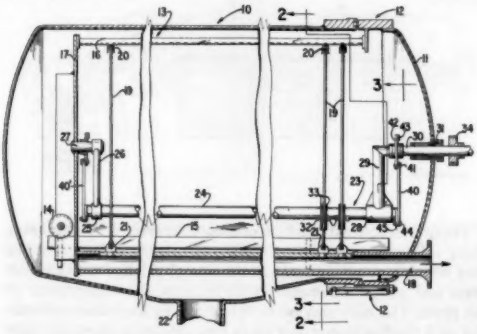
which form therebetween a tube-like chamber. Within said chamber are two spirally wrapped blades providing helical flights which have a 180° displacement. At their lowermost extremities one flight is positioned to commence at the inlet to while the other ends at the outlet from said chamber. In a pressured continuing flow through said chamber a pulp slurry is guided by said helical flights from said inlet to said outlet in a manner that a substantial amount of liquid is expressed through the tubular screens in a relatively small amount of space.

3,754,659

SLUICE MEANS AND ROTATABLE NOZZLES

John E. Krynski, East Moline; William C. Smith, Moline, and Kenneth A. Anderson, Silvis, all of Ill., assignors to Ametek, Inc., New York, N.Y.

Filed June 4, 1971, Ser. No. 150,095
Int. Cl. B01d *29/38, 29/34*
U.S. Cl. 210—334 **8 Claims**



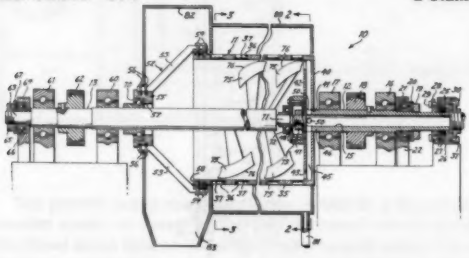
A horizontally disposed filter has a plurality of filter leaf elements spaced along its axis with a sluicing assembly provided for sluicing filter cake from the leaves. The assembly includes a pair of pivotally mounted crank-shaped arms whose outer portions are positioned outwardly of the peripheral edges of the filter leaf elements and on opposite sides thereof. Each arm pivots through an angle of about 80° and linkage or cable means are provided to pivot nozzles positioned on the outer portions of the arms. The nozzles pivot through angles of about 155° so that a sluicing liquid sprayed from the nozzles is distributed over the surfaces of the filter leaf elements. While the sluice arms pivot back and forth through their angles, the nozzles are concurrently pivoted with respect to the sluice arms.

3,754,660

APPARATUS FOR EXTRACTING FLUID FROM PULP

Herbert Cottrell, Box 240, R.D. 1, Matawan, N.J.

Filed July 28, 1971, Ser. No. 166,759
Int. Cl. B01d *33/06*
U.S. Cl. 210—374 **2 Claims**



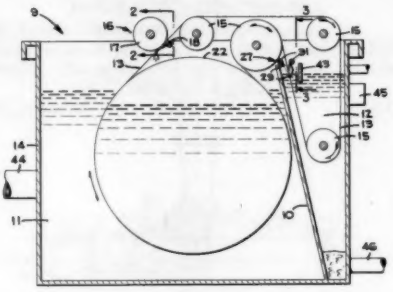
A fluid extracting apparatus including a rotary drum having a circumferential filter element for centrifugally passing fluid while retaining pulp, and rotary blade means in the drum for conveying pulp toward an outlet at a predetermined rate, to control the fluid content of the pulp.

3,754,661

APPARATUS FOR CLARIFYING LIQUID

Warren G. Palmer, Saratoga, Calif., and Roger Davidson, Arlington Heights, Ill., assignors to FMC Corporation, San Jose, Calif.

Filed Apr. 15, 1971, Ser. No. 134,334
Int. Cl. B01d *35/20*
U.S. Cl. 210—386 **10 Claims**



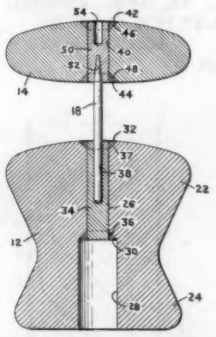
The effectiveness of a liquid clarifier having two liquid filled compartments, the first for depositing solids suspended in an incoming liquid solution on a continuous screen and the second for removing the solids from the same continuous screen, is optimized by preventing carry-over of water via the screen from the first compartment to the second by squeezing, wiping, drawing, or blowing the water off the screen as it emerges from the first compartment and by preventing carry-back of the solids from the second compartment to the first by spraying, wiping, blowing, or brushing the solids off the screen as it emerges from the second compartment.

3,754,662

APPARATUS FOR SUPPORTING A PLURALITY OF MEMBERS

Klaus D. Prinz, 251 Longview Rd., Union, N.J.

Filed Sept. 13, 1971, Ser. No. 180,035
Int. Cl. A47f *7/00*
U.S. Cl. 211—13 **3 Claims**



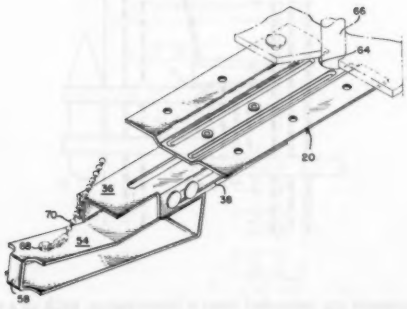
Apparatus for supporting a plurality of members in spaced relation including a first base, a bore formed in the first base, a second base, a bore formed in the second base, and an elongated pin slidably secured within the bores of the first and second bases to support them in axially disposed spaced relationship. Each of the bases is designed to support a member, e.

g., a wig or hair piece, thereon. The elongated pin is provided with at least one tapered end and adapted to be passed through the member supported.

3,754,663
NOTE-HOLDING DEVICE
Richard W. Bittner, Box 57, Sipesville, Pa.
Filed Jan. 18, 1972, Ser. No. 218,709
Int. Cl. A47f *5/08, 7/00*
U.S. Cl. 211—89 **9 Claims**

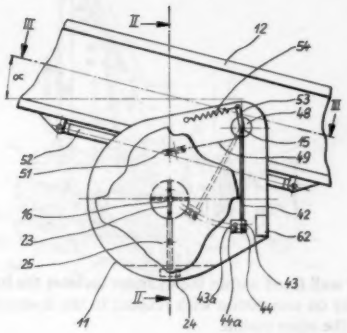
A note-holding device including a horizontally elongated base member having a vertically extending planar surface, a substantially coextensive cooperating elongated member having upper and lower edge structures and a marble receiving cavity therebetween, the cooperating member being fixedly secured to the base member by end walls closing the marble cavity and spacing the upper and lower edge structures from the vertical planar surface of the base member to define horizontally elongated upper and lower note paper receiving slots, the cavity is substantially filled with a plurality of spherical glass marbles which engage a lower surface within the cavity disposed at a 45° angle with the vertical planar surface so that the weight of the marbles bias the same into point contact with the vertical surface, the arrangement permits the marbles to releasably hold note paper either in a depending relation from the lower slot or an upstanding relation from the upper slot, or both.

3,754,664
TELESCOPING HANGER BRACKETS
Henry L. Kotkins, Seattle, Wash., assignor to Skyway Luggage Company, Seattle, Wash.
Filed Nov. 29, 1971, Ser. No. 202,833
Int. Cl. A45c *13/02*
U.S. Cl. 211—94 **3 Claims**



The telescoping multi-section hanger bracket for use in a luggage case wherein the hanger supporting means has a downward slope toward the back of the case, whereby the hangers tend to continually move to the back of the case. For loading or unloading the hangers, the bracket is extended outwardly from the case to a distance approximately twice the depth of the case and includes a minimum of two-point support for each of the sections during the entire extension, thereby preventing twisting or bending of the bracket when loaded and extended.

3,754,665
OVERLOAD SAFETY DEVICE FOR A CRANE
Peter Eiler, Dusseldorf-Benrath, Germany, assignor to Leo Gottwald K.G., Dusseldorf-Holthausen, Germany
Filed Feb. 14, 1972, Ser. No. 225,865
Int. Cl. B66c *13/48*
U.S. Cl. 212—39 MS **19 Claims**

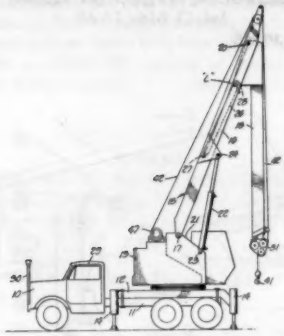


An overload safety device for cranes, particularly for mobile cranes, includes a housing preferably mounted on a surface of the crane boom which is under compression when loaded. Within the housing a plurality of cam discs are mounted on a shaft with each cam disc representing a specific boom or crane support arrangement. Each cam disc has a plurality of peripheral segmental surfaces and each of these surfaces represents a different operating length of the boom, such as in a telescopic boom. The shaft supporting the cam discs can be rotated to locate the applicable segmental surface in position for operation. Another shaft is located within the housing laterally offset from the shaft for the cam discs and it supports swivel arms located, under permissible load conditions, laterally outwardly from the cam discs. Adjacent swivel arms are arranged in pairs with each pair supporting a combination light source-photocell assembly. An expansion rod dynamometer is fixed to the boom and a cable extends from the dynamometer to the shaft for the swivel arms for pivoting the swivel arms and moving them into the range of the cam discs as the load on the boom approaches overload conditions. When overload conditions are reached, the cam discs interrupt the path between the light source and photocell and cut off further boom movements. Moreover, a pendulum arrangement is associated with the cam discs to assure proper orientation of the device as the crane and boom are moved.

3,754,666
FOLDING CRANE
Don Suverkrop, Bakersfield, Calif., assignor to Hopper, Inc., Bakersfield, Calif.
Continuation-in-part of Ser. No. 17,390, March 9, 1970, Pat. No. 3,608,952. This application Feb. 24, 1971, Ser. No. 118,453
Int. Cl. B66c *23/06*
U.S. Cl. 212—59 R **3 Claims**

A folding crane has a first boom comprising laterally spaced boom elements pivotally supported on a base and a second boom pivoted in the space between said elements. The second boom swings between an extended position, and a folded position in which the swinging end of the second boom lies adjacent the pivotal support for the first boom, and between laterally spaced supports on the base which pivotally carry the first boom elements. Separate power means move each boom. The second boom is movable by gravity toward or away from folded position by changing the inclination of the first boom in order to cause the power means for

the second boom to move through a dead-center position. In a modification, the power means for the second boom comprises an hydraulic cylinder having two pistons and piston rods, one piston rod projecting from each end of the cylinder.



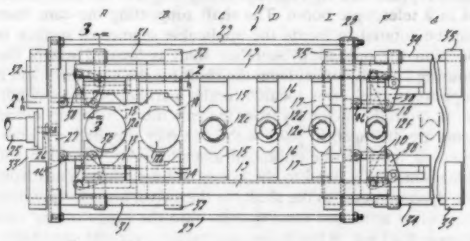
A barrier wall fixed within the cylinder isolates the hydraulic fluid acting on one piston with respect to the hydraulic fluid acting on the other piston.

3,754,667

TRANSFER MECHANISM

Robert H. Storch, 4674 Coachmaker Dr., Bloomfield Hills, Mich.

Filed Jan. 7, 1972, Ser. No. 216,178
Int. Cl. B65g *25/04*
U.S. Cl. 214—1 BB **10 Claims**



A mechanism for transferring workpieces along a succession of equidistantly spaced work stations. The mechanism comprises a plurality of workpiece-engaging members carried by one or more bars, together with actuating means for moving the bars in a rectangular path to engage, transfer, and disengage the workpieces, and retract to their original positions. The actuating means comprises a reciprocable actuator which may be linked with the motion of a press, link and bell crank means connecting the actuator to the bars, and cam and cam follower means connected to the bell crank to create rectilinear motion of the work-engaging bars in response to the reciprocating motion of the actuator.

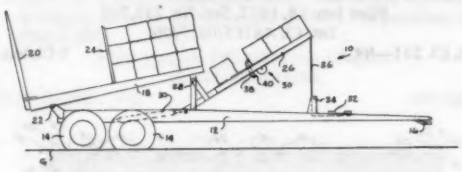
3,754,668

POSITIVE MECHANICAL DRIVE FOR THE BALE SEPARATING HOOKS OF A SINGLE BALE UNLOADING BALE WAGON

Gene R. Butler, Kingsburg, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed June 12, 1972, Ser. No. 261,760
Int. Cl. B65g *60/00*; B65p *1/04*
U.S. Cl. 214—8.5 G **14 Claims**

The present invention relates to a positive mechanical drive for cycling the bale separating hooks of a single bale unloading bale wagon between an up bale engaged position and a retracted non-engaged position. Generally, the positive mechanical drive comprises a single revolution clutch drivingly interconnected by a four bar linkage to a rockshaft



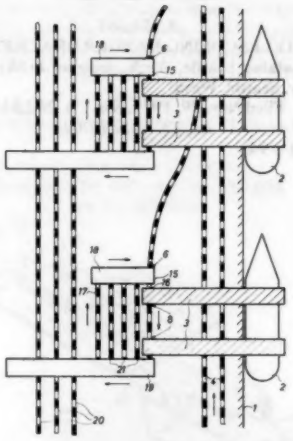
carrying the bale separating hooks. The single revolution clutch is clutched and declutched by an actuating linkage that is responsive to the timed movement of a cross conveyor associated with a single bale unloading table mounted on the bale wagon.

3,754,669

ARRANGEMENT FOR CONTINUOUSLY TRANSFERRING LOADS UNITS

Kurt Alsen, Wolfenbuttel, Germany, assignor to Salzgitter Aktiengesellschaft, Salzgitter-Drutte, Germany

Filed June 23, 1971, Ser. No. 155,888
Claims priority, application Germany, June 24, 1970, P 20 31 127.7; Aug. 8, 1970, P 20 39 585.1
Int. Cl. B65g *63/00*
U.S. Cl. 214—14 **17 Claims**



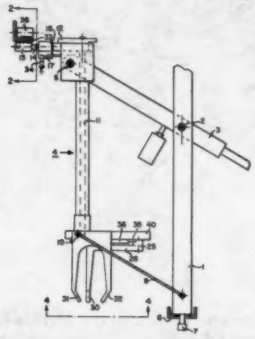
Containers are unloaded from a conveyance, such as a ship or train, at a first transfer station onto cars moving along an endless path also through a plurality of second transfer stations where the cars may be unloaded and then moved further on the endless track back to the first transfer station for repeated loading. The cars preferably leave the endless track at one of the second transfer stations, and other, empty cars are placed on long distance rails are supplied to the endless path for loading at the first transfer station. The operations are reversed when the ship is loaded at the first transfer station from cars loaded at the second transfer stations, or entering the endless track from rails at a second transfer station.

3,754,670

DISCHARGING DEVICE FOR A MOVABLE HOLDER

Jacob H. Mosterd, Stationsweg 117, Barneveld, Netherlands

Filed June 25, 1971, Ser. No. 156,835
Claims priority, application Netherlands, Aug. 12, 1970, 7011935
Int. Cl. B65g 47/38
U.S. Cl. 214—60 5 Claims



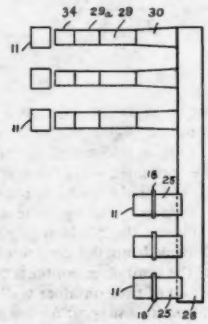
The invention relates to a device provided with a movable holder and means for making this holder discharge, retaining means being present for delaying the discharge of the holder, in such a way, that deviations in the location of the objects discharged by the holder, which deviations might have been caused by velocity differences of the holder, are compensated.

3,754,671

APPARATUS FOR TRANSFERRING AND SORTING ARTICLES

Feede Walda, Leendert Sparreboomstraat 15, Rotterdam, Netherlands

Continuation-in-part of Ser. No. 843,123, July 18, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,657
Claims priority, application Great Britain, July 22, 1968, 34,946/68
Int. Cl. B65b 35/00
U.S. Cl. 214—301 2 Claims



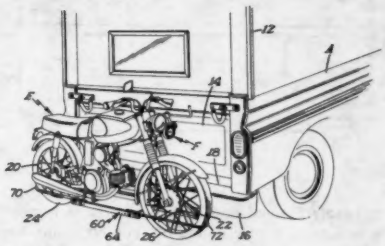
Apparatus for unloading articles from containers each of which has been loaded with like articles, sorting the articles, and loading each of a plurality of containers with assorted articles comprises mechanism for discharging articles upon a common conveyer from a plurality of successive groups of containers, each group of containers being loaded with like articles. A plurality of branch conveyers lead from the common conveyer, and each of them is provided with a gate that is operable to divert a selected article onto the branch conveyer from the common conveyer. A loading station is located at the end of each branch conveyer for holding a container in a position to receive articles from the branch conveyer.

3,754,672

MOTORCYCLE CARRIER HOIST FOR VEHICLE BUMPER

Ruben Blomquist, 104 Ryan Rd., and Herbert Blomquist, 9965 Greenwood Rd., both of Duluth, Minn.

Filed June 11, 1971, Ser. No. 152,279
Int. Cl. B60r 9/00
U.S. Cl. 214—450 7 Claims



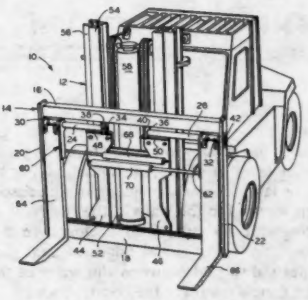
A motorcycle carrying attachment for the rear end of a motor vehicle comprising a guide structure having spaced posts supporting a guided structure slidable along the posts and a foldable cradle carried by the guided structure and foldable in a plane parallel to the plane of the posts together with a winch for moving the cradle from a position lying flat on the ground to an elevated position.

3,754,673

DETACHABLE FORK FOR LIFT TRUCKS

Rudolph C. Barda, Battle Creek, and William H. Ward, Athens, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 13, 1971, Ser. No. 207,381
Int. Cl. B66f 9/14
U.S. Cl. 214—731 5 Claims



A fork mount particularly for heavy duty lift trucks which provides a side shiftable shaft mounted fork hanger bracket having hook portions for receiving stub support shafts of a rapidly detachable fork tine, and a manipulatable keeper element for retaining the stub shafts in the hook portions for operation and for permitting the rapid release thereof for detachment of the fork tines from the lift truck under selected conditions.

3,754,674

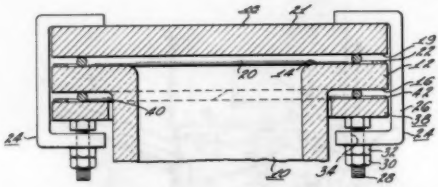
MEANS FOR PROVIDING HERMETIC SEALS

Henry J. Wesoloski, Milton, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Division of Ser. No. 691,421, Dec. 18, 1967, abandoned. This application Mar. 3, 1970, Ser. No. 18,804

Int. Cl. H01k 1/42

U.S. Cl. 220—2.3 R 3 Claims



The outwardly flanged end of a glass tube is hermetically sealed by means of a pure or indium coated aluminum wire gasket which is squeezed at a pressure of about 5,000 pounds per linear inch of wire between the glass flange and a metal closure plate and heated to about 482°F or above. The pressure is applied by C-clamps which grip the closure plate and a split ring collar surrounding the tube. An aluminum cushioning gasket is disposed between the collar and the glass flange to prevent glass fracture. Steel spacer shims surround both gaskets to prevent extrusion of the gaskets under pressure.

3,754,675

LOW-TEMPERATURE LIQUEFIED-GAS STORAGE RESERVOIR

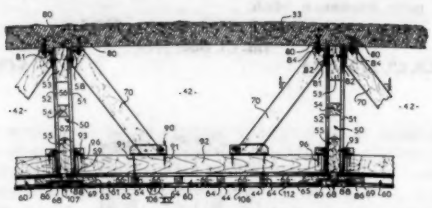
Lucien Louis Richard, Neuilly sur Seine, and Auguste Prosper Gilles, Paris, both of France, assignors to Gaz De France and Gaz Transport, Paris, France

Filed Oct. 18, 1971, Ser. No. 190,111

Claims priority, application France, Oct. 19, 1970, 7037691

Int. Cl. B65d 25/18

U.S. Cl. 220—9 LG 11 Claims



The reservoir intended for the storage of very great quantities of liquefied gas at very low temperature is provided with a heat insulating layer of very great thickness. For this purpose the insulating layer consists of juxtaposed caissons made of radial panels secured to the walls of the reservoir and of front panels resting side by side, with a clearance between one another, upon the inner radial edges of said radial panels. Struts angularly disposed between the walls of the reservoir and the front panels reinforce the construction.

3,754,676

POULTRY TRANSPORT CAGE

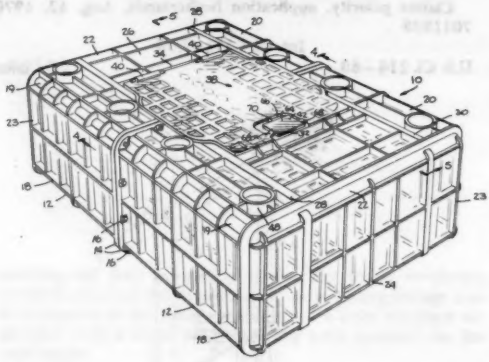
Theodor Box, 1108 Aileen Rd., Brielle, N.J.

Filed July 14, 1971, Ser. No. 162,536

Int. Cl. B65d 43/16, 1/38

U.S. Cl. 220—31 S 7 Claims

A poultry transport cage of the type having a rectangular frame structure supporting openwork sides, ends, bottom, and top with additional longitudinal and lateral enlarged beam members spaced from the sides and ends of the cage for reinforcing the top has an enlarged opening in the top for convenient insertion and withdrawal of poultry into and from the cage.



Flanges across the corners of the opening support a complementary hinged lid without restricting the lateral and longitudinal dimensions of the opening and at the same time round the corners of the opening to reduce injury to poultry being inserted into or withdrawn from the cage.

3,754,677

LIQUID CONTAINER DRAIN DEVICE

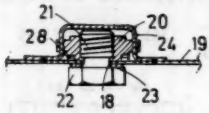
Karl Hug, Lenzhanner, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1971, Ser. No. 124,371

Claims priority, application Germany, Apr. 4, 1970, G 70 12 405.9

Int. Cl. B65d 41/04

U.S. Cl. 220—39 R 7 Claims



A liquid container drain device, such as a drain device for the sump of an automotive engine. A threaded nut, into which a threaded closure plug is insertable, is carried by a blade spring secured to the container wall at at least one end. When the plug is inserted, the blade spring is loaded, and the nut drawn against the container wall opposite a drain aperture; when the plug is removed the blade spring is unloaded and acts to lift the nut away from the container wall, thus permitting the dregs of the container contents to drain away. In modifications, a portion of the container wall may be resilient instead of, or in addition to, a support for the nut.

3,754,678

CONTAINER END WITH PROTECTIVE BEAD

James D. Fox, Darlington; Earl P. Norman, Jr., and Jerry F. Sansbury, both of Hartsville, all of S.C., assignors to Sonoco Products Company, Hartsville, S.C.

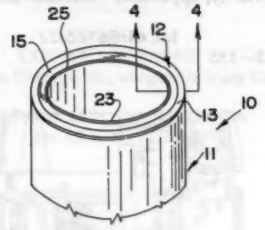
Filed July 14, 1971, Ser. No. 162,379

Int. Cl. B65d 17/20

U.S. Cl. 220—54 5 Claims

A container having a body and at least one open end with the container end secured to the body and closing the opening, wherein the container end includes a removable panel

portion, the removal of which produces an inner edge in the container end defining an access opening through which the contents of the container may be removed and a protective bead operatively associated with the container end and the removable panel portion for guarding the hazardous edges of



said removable panel portion and said inner edge for allowing the removal of the contents of the container through the access opening by the consumer without injury from the edge of the container end or the removed panel portion thereby produced.

3,754,679

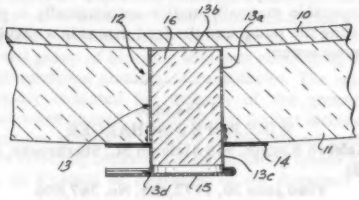
INSPECTION DEVICE

John William Beernink, 150 Wilkerson Pl., Corruna, Ontario, Canada

Filed Nov. 4, 1971, Ser. No. 195,795

Int. Cl. B65d *25/14, 41/00*

U.S. Cl. 220—63 **3 Claims**



An inspection device for mounting in a cavity in a body of insulating material surrounding a vessel wall, said device comprising a tubular part and a flange part connected thereto. The flange part is shaped to conform to the outer surface of the body of insulating material, and the tubular part has an inner portion projecting from an inner face of the flange part to enter said cavity and extend towards the vessel wall and an outer portion projecting from an outer face of the flange part. Closure means are also provided for securing to said outer portion to close the tubular part from the exterior. The device enables the vessel wall to be inspected promptly without the need to disrupt the insulating material, and without giving rise to any need to reinstate insulating material that has been removed for inspection purposes.

3,754,680

ARTICLE CARRIER

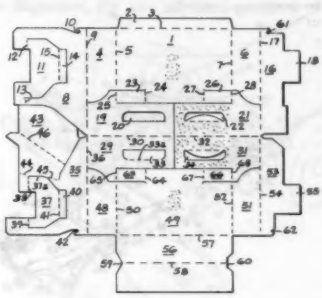
Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 15, 1971, Ser. No. 198,758

Int. Cl. B65d *5/46, 5/48*

U.S. Cl. 220—113 **3 Claims**

An article carrier of the basket style comprises a bottom wall, side walls foldably joined to the side edges of the bottom wall, end wall panels foldably joined to the end edges of the side walls and extending inwardly therefrom, medial partition structure including a pair of medial panels foldably joined respectively to said end wall panels at one end of the carrier and extending medially inward of the carrier, riser panels foldably joined to the end wall panels at the other end of the carrier and extending medially inward of the carrier, handle structure secured at one end to the upper ends of the riser



panels and at the other end to the upper portion of the medial panels together with auxiliary partition structure struck from said medial partition structure and foldably joined to one of said medial panels along a diagonal fold line and folded into flat face contacting relation therewith and arranged so that a portion of the auxiliary partition structure is interposed between and secured to the riser panels.

3,754,681

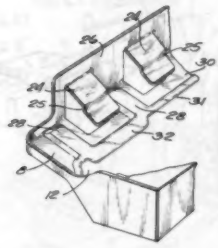
UNIVERSAL TOWEL DISPENSER

Norman J. Slye, and James A. Diring, both of Green Bay, Wis., assignors to Alwin Manufacturing Company, Inc., Green Bay, Wis.

Filed Mar. 11, 1971, Ser. No. 123,265

Int. Cl. A47k *10/24*

U.S. Cl. 221—45 **3 Claims**



In a cabinet having interior shelf flanges for the support of towels in a stack from which the lowermost is to be dispensed, there is a support for the intermediate portions of successive lowermost towels which support has extensions spaced to project from its opposite ends toward the dispensing slot.

3,754,682

SUGAR CANE PLANTER

Charles V. Allain, 909 2nd Street, Franklin, La.

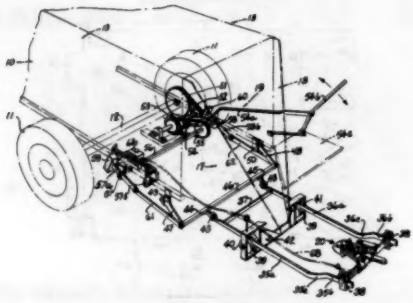
Filed Apr. 21, 1972, Ser. No. 246,225

Int. Cl. A01c

U.S. Cl. 221—185 **8 Claims**

The present disclosure is directed to a sugar cane planter which is placed on the rear of a cane cart and which receives sugar cane stood on their butt ends at the open end of the cane cart and into which a mechanical hand will enter and grasp cane stalks and transfer the stalks rearwardly clear of the cane

cart and drop same into the planting furrow as the planter moves over the ground. The mechanical hand or cane grasping means is reciprocated into and out of the hopper by a mechanism which converts the rotary motion of a power drive shaft driven from the cane cart wheels into a rectilinear



reciprocating motion at a speed and in synchronism with the rate of travel of the cane cart. The mechanical hand is hydraulically operated by a master cylinder which is cam operated from the power drive shaft in synchronism with the forward and backward reciprocation of the mechanical hand.

3,754,683

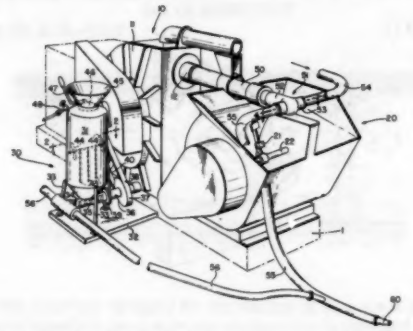
APPARATUS FOR PNEUMATICALLY PLACING SEMI-FLUID MATERIALS

John T. Broadfoot, 12714 Aurora Ave. North, Seattle, Wash.

Continuation of Ser. No. 175,764, June 18, 1970, abandoned. This application Aug. 27, 1971, Ser. No. 175,764

Int. Cl. B67d *5/60*

U.S. Cl. 222—134 **7 Claims**



Quick-setting concrete is applied to a work surface by air conveying wet concrete through a hose to a nozzle and air conveying a dry accelerator powder for the wet concrete through a separate hose into juncture with the stream of suspended wet concrete a predetermined distance back of the nozzle. A positive metering concrete pump meters the concrete into a T-intersection where compressed air entering through one side of the top of the T impinges at substantially right angles to the flow of wet concrete through the base of the T resulting in shearing off of discrete pieces of wet concrete which are conveyed through a hose attached to the other side of the T-intersection. The positive metering concrete pump is directly attached to a positive metering device for the accelerator powder so as to maintain the ratio of wet concrete to accelerator constant.

3,754,684

CENTRAL LUBRICATING DISPENSER

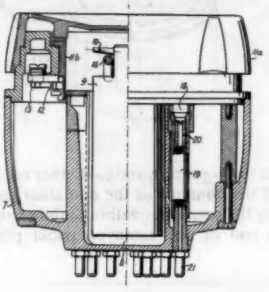
Otokar Chladek, Trebic, Czechoslovakia, assignor to Elitex Zavody Textilniho Strojuenstvi Generalni reditelstvi, Liberec, Czechoslovakia

Filed Aug. 26, 1970, Ser. No. 67,122

Claims priority, application Czechoslovakia, Sept. 3, 1969, 6014/69

Int. Cl. B67d *5/52*

U.S. Cl. 222—135 **10 Claims**



A lubricant dispenser having a storage vessel adapted to contain lubricant. The vessel may be divided into one or more compartments for feeding separate lubricants or the same lubricant to a plurality of discharge openings. A pump is located in the vessel and gravity discharge openings are arranged about the pump. At least one of the openings is supplanted by a pressure feed mechanism conducting lubricant from the vessel independently of the pump means. Actuating means, operable manually and/or automatically is provided for actuating the pump and the feed means in a simultaneous synchronous system.

3,754,685

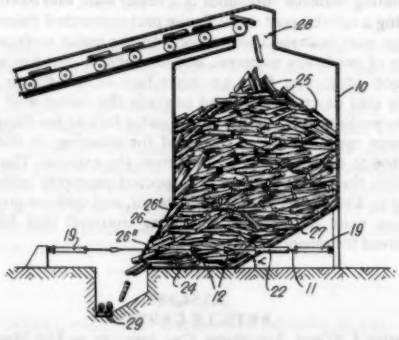
WIRE ROPE DISCHARGER

Pekka Kalervo Kauppi, 918 Malouin St., Sherbrooke, Quebec, Canada

Filed June 30, 1972, Ser. No. 267,896

Int. Cl. B65g *3/12*

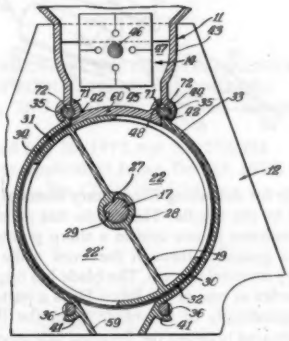
U.S. Cl. 222—196 **12 Claims**



A material discharging system comprising an elongated cable having a plurality of conveying elements fixedly secured, in spaced apart relationship, on the cable. Each conveying element has a diverging side wall for agitating material and opposed ends. A cable receiving hole extends across each conveying element between the ends for receiving a portion of the cable therein. One of the ends defines a conveying surface ex-

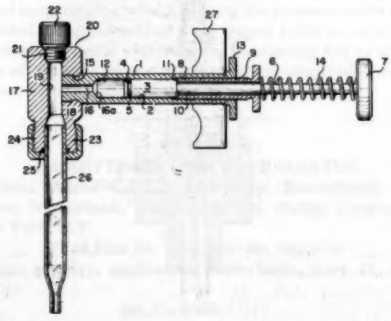
tending about the cable for engaging material when moved therethrough. The outer periphery of the conveying surface is connected to the side wall by a rearwardly tapered surface for both agitating and discharging the material. Reciprocating means are connected to each end of the cable for reciprocating the cable.

3,754,686
COFFEE DISPENSER
Harvey R. Karlen, Chicago, Ill., assignor to Cory Corporation, Chicago, Ill.
Filed Feb. 9, 1971, Ser. No. 113,996
Int. Cl. G01f 11/20
U.S. Cl. 222—238 17 Claims



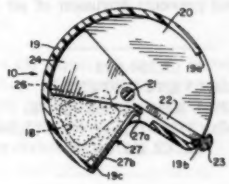
A dispenser for dispensing particulate material, such as coffee, in any one of a number of different preselected quantities. The dispenser includes means for delivering the coffee past a preselected group of blocking elements controlling the filling of a corresponding plurality of receptacles. The receptacles are movably mounted for delivery of the ground coffee therefrom when desired. The dispenser further includes agitating means for improved delivery of the ground coffee, with means for effecting operation of the agitating means automatically as an incident of operation of the dispenser delivery means.

3,754,687
MULTI-POSITIONAL PIPETTING DISPENSER
Robert W. Norton, Vineland, N.J., assignor to Kontes Glass Company, Vineland, N.J.
Filed Sept. 21, 1971, Ser. No. 182,469
Int. Cl. G01f 11/06
U.S. Cl. 222—309 6 Claims



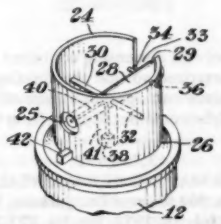
A pipetting dispenser of the piston-cylinder type with interchangeable fittings by which the operative movement of the piston may be arranged to be in line with or at an angle to the axis of an attached pipette and having adjustable stop means to limit travel of the piston within predetermined limits, together with means automatically retracting the piston from its discharge position to a position in engagement with said adjustable stop means, thereby insuring the repeated dispensing of like volumes of liquid from said pipette in successive operations of the dispenser, for any adjusted position of the stop means.

3,754,688
SOLIDS METERING DEVICE
Richard R. Colvin, 140 W. 57th St., New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 232,092
Int. Cl. G01f 11/24
U.S. Cl. 222—362 4 Claims



There is disclosed a dispenser for instant coffee and other granular materials, suitable for attachment to jars of such materials as a replacement for conventional jar caps, said dispenser having means for receiving a predetermined quantity of material from the interior of the container for dispensing the predetermined amount.

3,754,689
SAFETY OVERCAP FOR AEROSOL CONTAINERS
Elliott E. Blank, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 1, 1971, Ser. No. 176,917
Int. Cl. B65d 83/14
U.S. Cl. 222—402.11 7 Claims

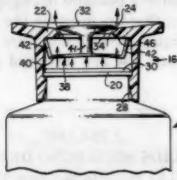


A safety overcap which, when attached to an aerosol container, prevents uninformed users such as children from dispensing products which may cause harm to them or others. The overcap includes a rotating shell with a hinged tab. When the shell is positioned for dispensing, the tab can be pushed inwardly against a tilt action inner element for dispensing of product.

3,754,690
FLEXIBLE CONTAINER WITH DISPENSING CAP
Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Nov. 18, 1970, Ser. No. 90,754
Int. Cl. B65d 35/50
U.S. Cl. 222—494 3 Claims

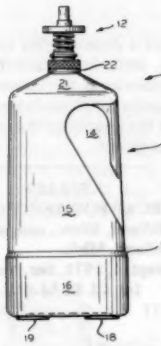
A plastic container having flexible sidewalls adapted for dispensing viscous materials. The container is provided with a

hollow, cylindrical neck section which receives a two-piece, snap-on dispensing cap. The dispensing cap contains a spring-loaded, normally closed valve member that is opened by application of pressure to the container to force the product to lift



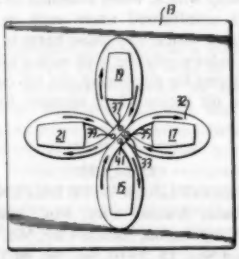
an upstanding tapered boss carried by the valve member from a sealing engagement with a central opening in the dispensing cap. When the pressure is released, the valve member automatically closes and prevents intrusion of air into the container.

3,754,691
SOLVENT DISPENSER
Frank S. Flider, 8139 S. Keating, Chicago, Ill.
Filed May 27, 1971, Ser. No. 147,346
Int. Cl. B67d *3/00*
U.S. Cl. 222—525 **2 Claims**



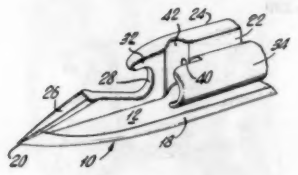
A self-closing solvent dispensing container fabricated from plastic and characterized so that the forefinger of the hand holding the container can operate a dispensing valve on the container without the container slipping from the grip.

3,754,692
DEVICE FOR MAKING ORNAMENTAL DESIGNS
Mildred P. Sanders, 304 Melrose Dr., Jackson, Miss.
Filed July 20, 1972, Ser. No. 273,365
Int. Cl. A41h *43/00*
U.S. Cl. 223—46 **5 Claims**



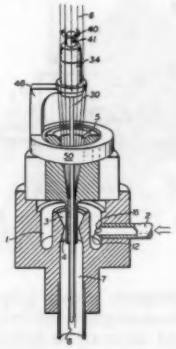
A device for making an ornamental design such as a Chinese frog from cording including a base with upstanding fingers. The fingers are spaced from the center of the flat upper face of the base and include extending lips at their terminal ends. Pinholes are located between the fingers and the center of the base. The base may have multiple apertures and the fingers may be removably inserted therein.

3,754,693
NEEDLE
Nicholas George Herr, 450 E. 63rd St., New York, N.Y.
Filed Aug. 4, 1972, Ser. No. 277,944
Int. Cl. F02d *11/10*; **D05b** *85/00*
U.S. Cl. 223—102 **9 Claims**



A needle for delivering filamentary material to work which is pierced by the needle. The needle has an elongated blade which terminates at one end in a sharp pointed tip which is adapted to puncture through the work while delivering the filamentary material thereto. The blade has opposed faces and fixedly carries at one of the latter faces a partition which extends longitudinally of the blade from the tip thereof and which is situated between the opposed side edges of the blade. The partition terminates in an outer free edge which is inclined to and merges with the tip of the blade, and this partition is formed in the region of the tip with an open eye which contains the filamentary material and is designed to allow free access to the material and within which the filamentary material is adapted to extend. Just rearwardly of the open eye the partition carries at opposite sides thereof a pair of tubular guides for the filamentary material so that these tubular guides prevent direct contact between the filamentary material and the work until the needle is withdrawn from the work.

3,754,694
FLUID ADJUSTING MEANS
Imants Reba, Vancouver, Wash., assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt/Main, Germany
Filed Jan. 6, 1972, Ser. No. 215,737
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **7 Claims**



An improvement in a device through which passage of filaments is accelerated which device has a housing, a primary

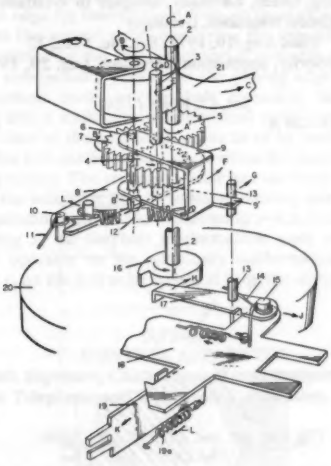
fluid inlet through which fluid enters to accelerate said passage of filaments, a plenum communicating with said fluid inlet, and a passageway in fluid communicating relationship with said plenum which passageway terminates within a filament passageway through which spun filaments pass, said improvement comprising at least two baffle means disposed in said fluid inlet, one of said baffle means being a primary fluid directing means, another of said baffle means being a secondary fluid directing means; an improvement for such an accelerating means comprising at least one variable baffle disposed in said plenum; a device for determining the extent of swirl in a tube through which fluid passes which device comprises a rotatable member adapted to extend within said tube through which fluid passes and indicator means associated with such rotatable member for measuring the number of rotations in a given period of time.

3,754,695

AUTOMATIC SHUT-OFF SYSTEM FOR MAGNETIC TAPE REPRODUCERS AND RECORDERS

Nobuo Suzuki, 26-9 Yokoyama 3-chome, Sagamihara-shi, Japan

Filed July 20, 1972, Ser. No. 273,374
Claims priority, application Japan, Dec. 25, 1971, 47/889
Int. Cl. G11b *15/28*
U.S. Cl. 226—174 **4 Claims**



A magnetic tape reproducer and recorder with an automatic switch-off system, including a pressure roller driven by a motor driven shaft and engaged by another shaft which is adapted to be rotated when engaging the pressure roller and to be rotated independently of the pressure roller so as to cause the giving of a signal which causes the starting key or starting button of the tape device to return to its inoperative starting position when the tape has run off.

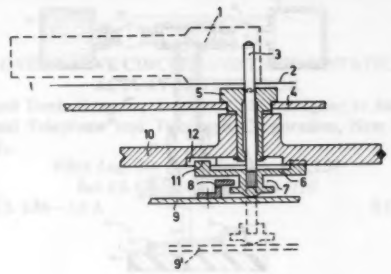
3,754,696

CASSETTE RECORDING APPARATUS

Wilhelmus Petrus Carolus Rietbergen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,676
Claims priority, application Netherlands, June 25, 1971, 7108766
Int. Cl. B65h *17/22*
U.S. Cl. 226—179 **4 Claims**

Apparatus for recording and/or playing back magnetic recordings on and/or from a recording tape accommodated in a cassette, which apparatus is provided with at least one capstan which is displaceable in the direction of its longitudinal axis between an operative position and a retracted position. A flywheel, which is arranged coaxially with the capstan and



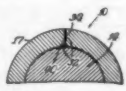
serves to drive the capstan, is axially immovably mounted on the outer surface of a fixed sleeve in which the capstan is mounted. In the operative position of the capstan the rotation movement of the flywheel is transmitted to the capstan by means of a dog clutch.

3,754,697

APPARATUS FOR PROVIDING COMPOSITE SHEATHED ELEMENT

Thomas C. Stout, Concord, Mass., and Andrew J. Kaiser, Albany, Ga., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 71,122, Sept. 10, 1970, Pat. No. 3,705,022, which is a division of Ser. No. 736,649, June 13, 1968, Pat. No. 3,562,899. This application Sept. 13, 1972, Ser. No. 288,755
Int. Cl. B23k *1/20*
U.S. Cl. 228—17 **5 Claims**



An apparatus for forming clad wire wherein the wire is surrounded by a strip of sheathing material deformed about the wire with the edges thereof being at least partially secured with the securing means not attaching the sheathing material to the wire. The product is of a metallic composite comprising a metal core and a metal sheath surrounding the core with the adjacent edges of the sheath defining a semi-continuous longitudinal seam.

3,754,698

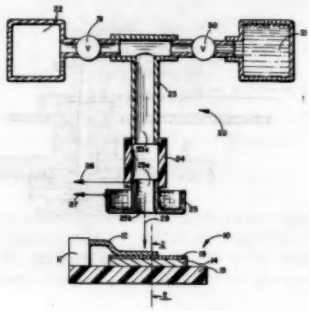
HOT GAS FUSION APPARATUS

Julius H. Bochinski, and John E. Linkel, both of La Habra, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 85,047, Oct. 29, 1970, Pat. No. 3,698,699. This application Dec. 20, 1971, Ser. No. 209,860
Int. Cl. B23k *1/00, 5/00*
U.S. Cl. 228—42 **12 Claims**

A hydrazine compound in a carrier gas wherein the hydrazine compound is transformed into its gaseous state and the gaseous hydrazine is used by processing apparatus to bond metallic materials with a soldering material, to remove film compound formation from metallic surfaces, and to minimize porous formation in soldering materials which may be attached to metallic surfaces. The hydrazine compound is trans-

ported by the gaseous carrier and heated to a temperature that vaporizes the hydrazine and is used for reacting the gaseous



hydrazine with the film formation on the metals or with the soldering material thereon to achieve excellent bonding characteristics and low conductivity joints.

3,754,699

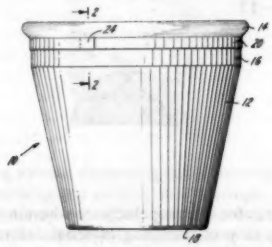
REINFORCED LARGE POLYSTYRENE CONTAINER

Roy Edward Moore, Phoenix, Ariz., assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed July 14, 1971, Ser. No. 162,485

Int. Cl. B65d *3/00*

U.S. Cl. 229—1.5 B **4 Claims**



An expanded polystyrene container is described as having capacities of between about 50 and 200 fluid ounces and having a pressure-sensitive adhesive-backed reinforcing band positioned adjacent its uppermost peripheral edge.

3,754,700

SURGICAL POUCHES

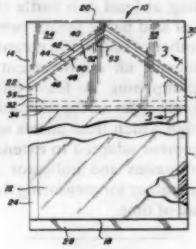
Joseph Paul Bonk, Des Plaines, Ill., assignor to Rollprint Packaging Products, Inc, Chicago, Ill.

Continuation-in-part of Ser. No. 836,332, June 25, 1969, Pat. No. 3,627,611. This application Feb. 26, 1971, Ser. No. 119,292

Int. Cl. B65d *31/00*

U.S. Cl. 229—62 **17 Claims**

Surgical pouches having a back wall of sheet polyethylene and a front wall of sheet polyethylene with a header piece of sterilizable, surgical kraft paper or other gas permeable, sheet material having bacteria holdout properties are disclosed



wherein the instrument contained within the pouch may be sterilized after the pouch is sealed.

3,754,701

SELF CLEANING CENTRIFUGE DRUM WITH A PISTON VALVE DEFINING ONE SIDE OF THE SLUDGE CHAMBER

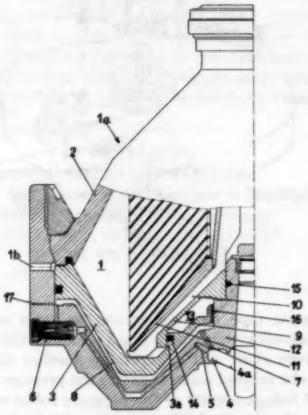
Paul Bruning, Oelde, Germany, assignor to Westfalia Separator AG, Oelde/Westfalen, Germany

Filed Aug. 10, 1971, Ser. No. 170,532

Claims priority, application Germany, Aug. 20, 1970, P 20 41 371.2

Int. Cl. B04b *11/00*

U.S. Cl. 233—20 A **4 Claims**

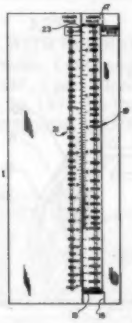


A centrifugal separator constructed for intermittent discharge of sludge. One end member of the separator drum is a valve piston closure movable vertically to open and close sludge discharge nozzles disposed at the outer periphery of the drum. The valve piston closure forms one end of the sludge chamber in the drum. Radially inwardly of the sludge chamber, a cap is mounted in the separator drum covering a part of the valve piston closure and the cap and valve piston closure are in sliding sealing contact, providing a chamber on the drum side of the valve piston closure for receiving and holding fluid to force the valve piston closure to the open position. On other side of the valve piston closure, a chamber is provided for receiving fluid for closing of the valve.

3,754,702
CALCULATING DEVICE

Walter K. Schwarz, and David J. Schlink, both of Peoria, Ill., assignors to The Peoria Journal Star, Inc., Peoria, Ill.

Filed July 13, 1972, Ser. No. 271,629
Int. Cl. G06g *1/04*; G06c *19/02*; G06g *1/12*
U.S. Cl. 235—71 A **13 Claims**

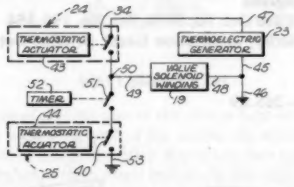


A calculating device for making mathematical calculations comprises a body including first and second panels joined along an edge for folding them from an open to a closed position with the second panel overlaying the face of the first. A belt is carried by the first panel and is movable with respect thereto substantially parallel to the joining edge. There is a mathematical scale on the belt extending longitudinally thereof and a stationary mathematical scale located on the outside face of the second panel so as to be parallel and adjacent the belt mathematical scale when the panels are in the closed position. The stationary scale has the same unit dimension as the belt scale and includes an identity operator index. A computatin based on the relationship $z=f(x,y)$ may be made by setting x_1 on the belt mathematical scale adjacent the identity operator on the stationary mathematical scale and reading z_1 on the belt scale adjacent y_1 on the stationary scale.

3,754,703
CONTROL APPARATUS

Domenick Saponara, Chattanooga, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,077
Int. Cl. F23n *5/10*
U.S. Cl. 236—15 A **8 Claims**

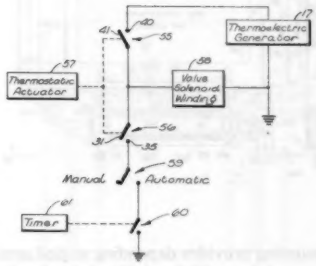


A control assembly to operate a gas oven. The main burner receives gas from a solenoid valve energized by a thermoelectric generator through a main thermostat switch. In order to reduce the oven temperature to, e.g. 170° F. to keep the food warm after a timer has run down, the timer and a keep-warm thermostat operate two switches, respectively, to short circuit the solenoid or the thermoelectric generator periodically. The thermoelectric generator output is in the millivolt region. Thus, use of one or two additional, inexpensive, series switches in the circuit can make solenoid operation unreliable because of even moderate contact resistance. Even the use of expensive gold may not avoid the series switch problem. The control assembly disclosed herein avoids this problem by use of a disabling shunt instead of a series switch.

3,754,704
OVEN VALVE CIRCUIT AND THERMOSTATIC ACTUATOR THEREFOR

Richard Davis Grayson, Arcadia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,139
Int. Cl. G05d *23/22*; F23n *5/10*
U.S. Cl. 236—15 A **8 Claims**



A gas oven having one thermostat switch operated main burner solenoid valve utilizing a pilot heated thermoelectric generator for electrical power to energize the valve solenoid. The generator, the solenoid and the one switch are thus connected in series in a closed loop. A timer and another thermostat switch are connected in a series circuit that shunts the solenoid or thermoelectric generator or both. Opening and closing of the one switch controls baking temperature. The timer switch disables the other switch until the baking period of time has ended. The timer switch then closes and permits the other switch to act as an override and periodically to provide a short circuit to keep the oven warm, but at a temperature, e.g., 170°F., less than the baking temperature. The short circuiting of the solenoid or thermoelectric generator is an outstanding advantage because expensive gold or platinum plated contacts and unreliability are avoided and the time-control circuit is simplified. Inexpensive high resistance contacts in the closed loop are undesirable because of the low e.m.f. provided by the thermoelectric generator. A single thermostatic actuator operates both of the thermostat switches. The single thermostatic actuator makes possible a substantial equipment and cost saving. The actuator is also of an economical construction because leaf springs and a diaphragm bias spring are employed.

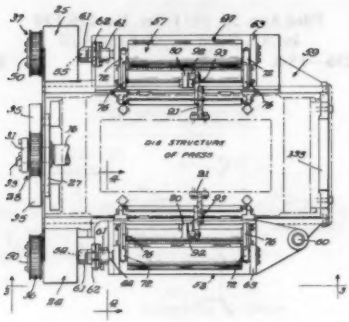
3,754,705
DOUBLE CAM DRIVEN FEED ROLL

Chester M. Wiig, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed July 5, 1972, Ser. No. 269,019
Int. Cl. G03b *1/56*
U.S. Cl. 226—90 **17 Claims**

The present invention is adapted to be associated with a cutting and punching press and accordingly a pair of feed rolls including an upper idler feed roll and a lower driven feed roll is journalled respectively by an entering end frame section and by a stationary exit end frame section. The entering end frame section is pivotally movable to permit access to the die structure of the press and the constantly rotating shaft of the press

is operatively connected by a flexible timing belt to driven pulleys and then through cam and follower devices to the lower feed rolls which are thus caused to rotate intermittently. A vernier type adjustable mounting is provided for the upper feed roll so that with the rolls in assembled relation different vernier openings in the assembled parts can be aligned and as a result the operative position of the upper feed roll with respect to the lower feed roll can be varied to accomodate lower feed rolls of larger or smaller diameter. Also the vernier



adjustable mounting provides depending angled arms and air bags are associated therewith for yieldingly biasing the arms in a direction to force the upper feed roll into pressure contact with its lower feed roll. A connecting tube forming part of the vernier adjustable mounting is cammed by means on the upper reciprocating die of the press on each down stroke thereof to rock the tube and the upper feed roll to lift the same from contact with its lower feed roll whereby to momentarily free the material being fed while the press is operative for cutting and punching the material.

3,754,706

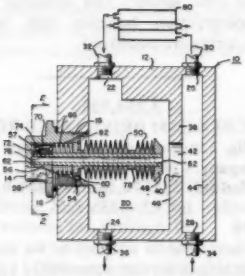
TEMPERATURE RESPONSIVE BYPASS VALVE

Ting C. Tao, Bedford Heights, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 15, 1971, Ser. No. 198,735

Int. Cl. G05d 27/00

U.S. Cl. 236—92 R **3 Claims**



A normally pressure balanced thermally responsive bypass valve is provided in which the pressure balance is disabled above a predetermined fluid pressure.

3,754,707

DIFFUSING BOX

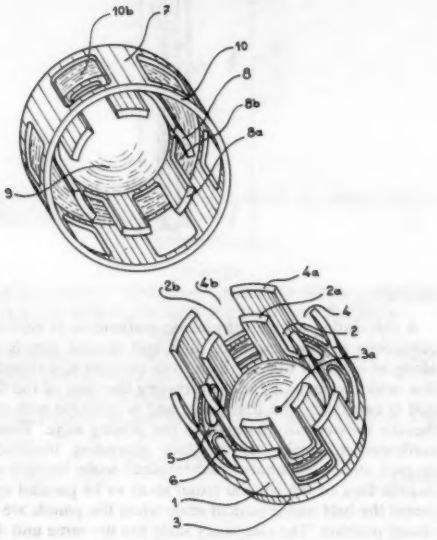
Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed June 21, 1972, Ser. No. 264,921

Claims priority, application France, June 24, 1971, 7123079

Int. Cl. A24f 25/00; A61l 9/04

U.S. Cl. 239—59 **10 Claims**



Box for holding a material to be slowly diffused comprises two mating parts, each consisting of a disc carrying a pair of concentric walls which may be interfitted to form a central chamber holding the material and an annular chamber surrounding the central chamber. Openings are provided in the walls which may be moved into and out of registration to open and close the box.

3,754,708

GAS TURBINE ENGINE THRUST REVERSERS

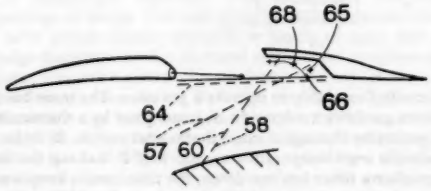
Jack Britt, Ambergate, and Leonard John Rodgers, Spondon, both of England, assignors to The Secretary of State for Defence, in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

Filed Oct. 18, 1971, Ser. No. 190,354

Claims priority, application Great Britain, Oct. 20, 1970, 48662/70

Int. Cl. B64c 15/04

U.S. Cl. 239—265.29 **7 Claims**



Aircraft gas turbine engine duct blocker doors are mounted so as to move across the duct in a manner which causes fluid

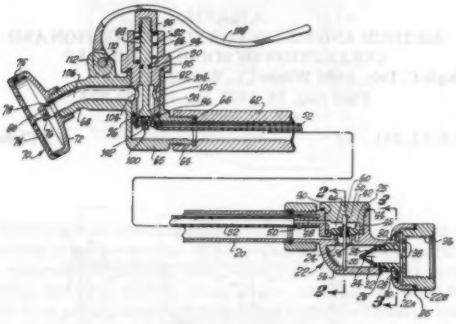
pressures to combine with door mounting structure reaction loads so as to produce a resultant force on the doors which, up to a given point in aircraft flight conditions, the resultant force tries to stop the doors from moving across the duct and, beyond said point, helps the doors to move across the duct, thereby providing a fail/safe operation of the doors during given aircraft flight conditions.

3,754,709

HOSE NOZZLE WITH DISCHARGE CONTROL

Kurt A. Laatsch, La Puente, Calif., assignor to Joseph R. Battieger, La Mirada, Calif., a part interest

Filed Sept. 20, 1971, Ser. No. 181,662
Int. Cl. B05b 9/08, 1/30; E03c 1/10
U.S. Cl. 239—530 **27 Claims**



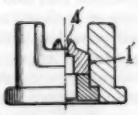
In a device to wash bedpans in a hospital, an inlet end of a hose is connected to a pressured water supply and the outlet end of the hose is equipped with both a discharge nozzle and manual means for control of the discharge from the nozzle. The inlet end of the hose is equipped with a check valve and anti-syphon means upstream from the check valve.

3,754,710

NOZZLE TIP OF A SPRAY GUN OF THE AIRLESS TYPE

Kihachi Chimura, Nishi-ku, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Inouye Shokai (Inouye & Co., Ltd.), Yokohama-shi, Japan

Filed July 27, 1972, Ser. No. 275,855
Claims priority, application Japan, Aug. 7, 1971, 46/59835
Int. Cl. B05b 1/00
U.S. Cl. 239—597 **9 Claims**



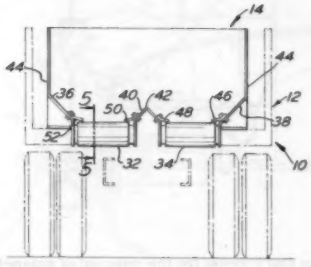
A nozzle tip of a spray gun of the airless type in which a slot is formed at a forward end of the nozzle tip which slot has a bottom at which a nozzle orifice opens and two opposite walls disposed parallel to each other and along the major axis of the nozzle orifice, each wall having an inner surface inclined outwardly in going from bottom to top so that the slot is trapezoidal in cross-sectional shape. The nozzle orifice at its edge is substantially in the form of a rectangle with four sides thereof being slightly curved outwardly, and a connecting portion between the nozzle orifice and a passage for the paint inside the gun is elliptically curved, the degree of elliptic curving varying depending on the specific gravity and viscosity of the paint used. The nozzle tip shaped and configured as aforementioned represents an improvement in conventional nozzle tips of the type described, permitting the production of a tail or a maximum thickness portion near each of opposite end portions of the pattern of a coat of paint applied by a conventional nozzle tip to be avoided.

3,754,711

LOW PROFILE FEEDING SPREADER

William Gledhill, Galion, Ohio, assignor to The Gledhill Road Machinery Company, Galion, Ohio

Filed Feb. 22, 1972, Ser. No. 227,944
Int. Cl. A01c 19/00
U.S. Cl. 239—674 **6 Claims**



A hopper body is mounted on the bed of a truck for spreading particulate matter over a wide area as the truck moves forward. Normally some special means is mounted near the rear of the truck for broadcasting the particulate matter. For example, in the northern part of the United States a dump truck may spread a mixture of salt and sand on roadways following a snow storm to melt the snow and provide better traction for following vehicles. Dual conveying belts are located in the bottom of the hopper to move the salt, sand or other particulate material to the broadcasting means at the rear of the hopper. Each belt runs over both a driving drum located beyond the rear wall of the hopper and an idler drum located adjacent the front wall of the hopper. Guide means are located adjacent each drum to force the belt into parallel upper and lower paths with the spacing between said paths being less than the diameter of either drum. The sides of the hopper are inclined downwardly toward the conveyors to prevent material from collecting in corners and to assist gravity feed of material to said conveyors.

3,754,712

PREPARATION OF STABLE SUSPENSION OF CALCINED CLAY

Tom A. Cecil, Highland Park, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Filed Mar. 15, 1972, Ser. No. 235,019
Int. Cl. B02c 19/12
U.S. Cl. 241—16 **2 Claims**

Method for forming a fluid, concentrated, aqueous suspension of calcined clay which is stable without adding a colloidal thickening agent. A suspension of the calcined kaolin clay containing a minimal amount of a clay deflocculating agent is subjected to wet-milling during which increments of calcined kaolin clay are added until a fluid concentrated suspension of desired high solids content is produced.

3,754,713

SEPARATION OF MAGNETIZABLE PARTICLES

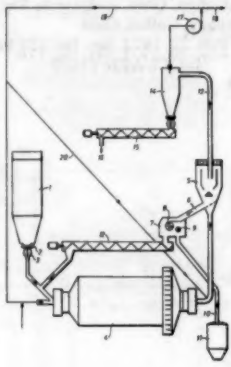
Gerhard Kienast; Heribert Stutgens, and Hans-Gunter Zander, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 17, 1971, Ser. No. 125,149

Claims priority, application Germany, Mar. 28, 1970, P 20 15 073.6

Int. Cl. B07b *4/00*

U.S. Cl. 241—24 5 Claims



Apparatus and process for the removal of magnetizable particles during grinding of material containing such particles, e.g. grinding of iron-containing titanium ores or slag. The titanium ore, for example, is ground, ground material is pneumatically conveyed to a separator from whence the fines are withdrawn to be treated in conventional manner. The coarse material is subjected to magnetic attraction to remove magnetizable particles and the balance is recycled for further grinding.

3,754,714

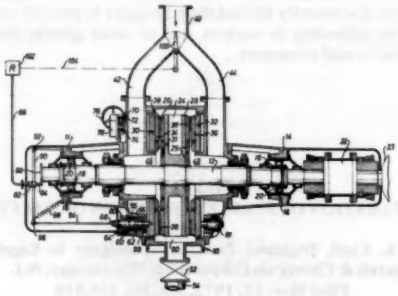
GRINDING APPARATUS ESPECIALLY FOR LIGNOCELLULOSE CONTAINING MATERIAL

Rolf Bertil Reinhall, Killingevagen 16, Lidingo, Sweden

Filed Sept. 24, 1971, Ser. No. 183,362

Int. Cl. B02c *7/14*

U.S. Cl. 241—34 3 Claims



A grinding aparatus especially for lignocellulose containing material having two pairs of cooperating grinding discs. In each pair of grinding discs one disc is fixed to a stationary casing and the other carried on a common shaft extending through the casing from end to end and mounted rotatably in bearings permitting axial self-adjustment of the shaft responsive to the pressure prevailing in the interspaces between each pair of cooperating grinding discs; the disc mounted on the rotatable shaft performing a rotational movement relative to the disc which is fixed to the stationary casing. Each pair of cooperating grinding discs has a supply channel for the material to be ground. A feeler member is provided to ascertain the axial position of the shaft and adapted to emit an impulse to a control or regulation member for distributing of the material to be ground to the supply channels in such a manner that divergences in the width of the interspaces within the two pairs of cooperating discs are compensated by increase of the supply of material to be ground to the channel communicating with the interspace having momentarily the smaller width.

3,754,715

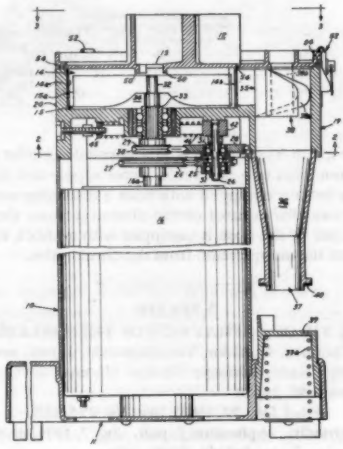
METHOD AND MEANS FOR SIZE REDUCTION AND COLLECTION OF SOLID MATERIALS

Doyle C. Udy, 1680 Wilson Ct., Boulder, Colo.

Filed Aug. 16, 1971, Ser. No. 171,872

Int. Cl. B02c *13/18*

U.S. Cl. 241—73 3 Claims

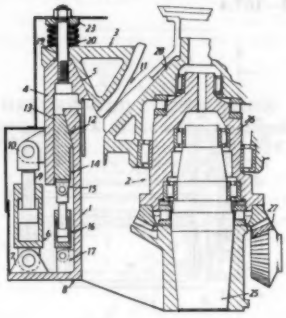


A combined size reduction mill and collector for forming powdered samples having an enclosed cylindrical chamber including an upright wall provided with an abrasive surface throughout a greater portion of its circumferential extent and a perforate surface throughout its remaining extent, an inlet at the top of the chamber for gravitational feed of commodities to its interior, baffle means disposed in the chamber between a zone of material deposit and the perforate surface, a rotary impeller in horizontal alignment with the abrasive surface and inwardly thereof, a discharge outlet from the chamber exteriorly of the perforate surface, a conduit connecting said outlet with the feed intake of a cyclone collector, and means for imparting a centrifugal flow to matter entering the cyclone collector so as to pass substantially the entire product to a lower discharge outlet and holding receptacle. The combined size reduction mill and collector also includes a helical path formed adjacent the inlet of the cyclone collector and facing toward said collector's underflow outlet, the distance separating the impeller blades from the abrasive and perforate surfaces is equal to approximately the diameter of the material to be fed into the grinding chamber, and the material traveling within said grinding chamber undegoes an abrupt change in direction of flow upon traveling to the inlet to the cyclone collector.

3,754,716
GYRATORY CRUSHERS

Roy Webster, Glenfield, England, assignor to Pegson Limited, Coalville, Leicester, England

Filed Dec. 13, 1971, Ser. No. 207,125
Claims priority, application Great Britain, Jan. 1, 1971, 0,009/71
Int. Cl. B02c 2/04
U.S. Cl. 241—208 5 Claims

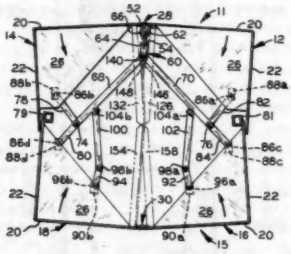


The invention concerns gyratory crushers and proposes that the bowl in such a crusher be adjustably supported by hydraulic piston/cylinder units, hydraulically actuated wedges positioning the bowl radially when in use, and that the bowl be held in an adjusted position by locking hydraulic liquid on one side of the pistons of the support units whilst permitting the release of the bowl from the adjusted position in the event of the intrusion of tramp iron or the like. The crusher comprises a control system having elements for locking liquid on said sides, sensing elements for sensing the pressure on said sides and for actuating the locking elements to release said liquid in the event that tramp iron or the like intrudes into the crushing chamber and hydraulic acumulator elements connected to the other sides of the pistons such that, when the locked liquid is released, the bowl is automatically raised to clear the tramp iron by liquid pressure derived from said accumulator means.

3,754,717
COLLAPSIBLE MANDREL

Glen W. Saidla, Wyomissing Hill, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed July 12, 1971, Ser. No. 161,804
Int. Cl. B28b 7/30
U.S. Cl. 242—1 4 Claims

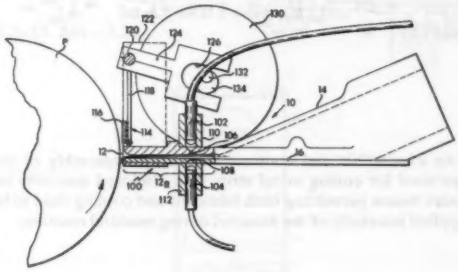


A collapsible mandrel is provided for use, for example, in the production of filament wound containers and has retractable side walls which are operative in such a manner as to permit the walls to be peeled-away from contact with the interior of a finished container so that the mandrel can be quickly and easily removed from the interior of the container and readily reusable for the production of another container. Retraction of the side walls is accomplished by the provision of a primary and secondary lever or linkage assembly. The secondary linkage assembly is operatively connected to the side walls of the mandrel while the primary linkage is connected to and controls the movement of the secondary linkage by means of a fluid power actuated cylinder.

3,754,718
END-FINDING MEANS FOR YARN HANDLING APPARATUS

Samuel Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.

Filed Aug. 30, 1971, Ser. No. 176,132
Int. Cl. B65h 54/24
U.S. Cl. 242—35.6 R 20 Claims

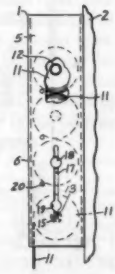


A yarn end-finding nozzle mounted to be moved to and from the surface of te package on which an end is to be found and a yarn knotter, said nozzle being provided with a sensor adapted when it detects the found end within the nozzle to effect retraction of the nozzle to the knotting position for knotting and resumption of the winding operation.

3,754,719
ROLL PAPER DISPENSERS

Solomon K. Choy, 601 Iaukea St., Honolulu, Hawaii

Filed Apr. 26, 1971, Ser. No. 137,400
Int. Cl. A47k 10/22
U.S. Cl. 242—55.3 8 Claims

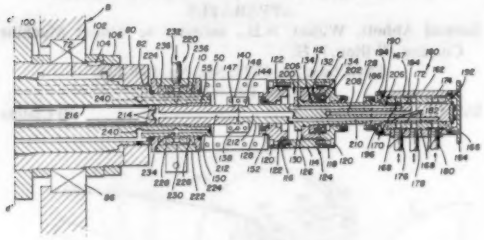


This invention concerns a dispenser of paper from rolls thereof and which rolls may contain toilet paper or paper towels and similar rolls of material to be neatly stored and dispensed. A magazine is associated with the dispenser so that paper rolls, or rolls of material, are always available for use in the dispenser. A roller core is removed through an enlarged opening in the side of a dispenser and is inserted laterally through an enlarged opening into the next above roll.

3,754,720
EXPANDIBLE MANDREL ASSEMBLY

John Gross, and Arthur L. Lind, both of Salem, Ohio, assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed July 16, 1969, Ser. No. 842,238
Int. Cl. B65h *75/18*
U.S. Cl. 242—72.1 8 Claims

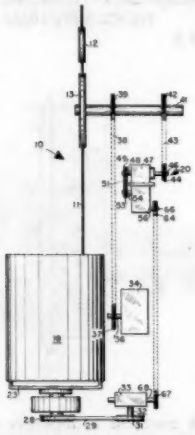


An expandible and contractible mandrel assembly of the type used for coiling metal strip. The disclosed assembly includes means permitting both lubricant and cooling fluid to be supplied internally of the mandrel during mandrel rotation.

3,754,721
PACKAGING APPARATUS FOR STRAND

Jerry L. Herrendeen, and Phillip E. Liebing, both of Muskegon, Mich., assignors to Anaconda Wire and Cable Company New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,045
Int. Cl. B21c *47/08*
U.S. Cl. 242—83 5 Claims

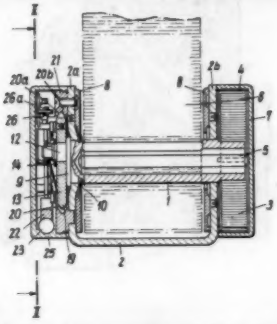


Apparatus for depositing strand into a rotating drum package varies the speed of rotation of the drum by means of a speed reducer driven in reverse through a sprocket having its axis of rotation offset from its center.

3,754,722
SELF-LOCKING WINDING DEVICE FOR THE SAFETY BELT OF AIR AND LAND VEHICLES

Hubert Nohren, Halstenbek, Germany, assignor to Autoflug GmbH, Egenbuttel, Germany

Filed Apr. 20, 1971, Ser. No. 135,607
Claims priority, application Germany, Apr. 21, 1970, P 20 19 135.9
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 19 Claims

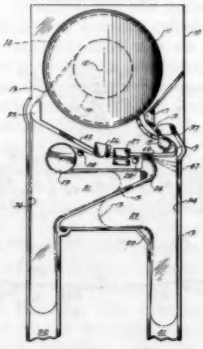


A device for winding up one part of a safety belt for a passenger vehicle, especially a land or air vehicle. The device has a spring biased shaft to which the belt is connected so the belt is normally drawn into a housing. The belt can be pulled from the housing when the belt is to be placed in service. The device includes an arresting mechanism operable to lock the shaft to the housing which is actuated when at least one of a certain speed of rotation or a certain angular acceleration of the shaft is exceeded. The device also includes an inertia operated system sensitive to bodily acceleration of the device in at least one plane for actuating said arresting mechanism.

3,754,723
SELF-THREADING MEANS FOR TAPE

John A. Meyer, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 12, 1971, Ser. No. 161,521
Int. Cl. G11b *15/66, 15/58*
U.S. Cl. 242—193 9 Claims



Magnetic recording tape is stored on a reel coaxial with a takeup reel both of which are canted at a small angle relative to a work plane in which a magnetic recording transducer is arranged. The tape passes through vacuum storage columns, over air bearings, past the recording transducer and over a

drive capstan between the storage reel and the takeup reel. The twist of the tape between the plane of the reels and the work plane is accomplished in the vacuum columns. In order to self-thread the leading end of a tape through such a path, jets of air guide the tape. At a sharp turn and location of tape twist during self-threading, a plurality of spaced apart gas jets are focused at a point near the end of the turn for guiding the tape.

3,754,724

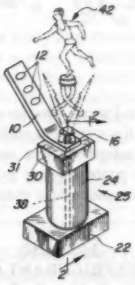
HANGER STRIP FOR TROPHIES

Theodore Osowski, 4404 S. Florida Ave., Lakeland, Fla.

Filed Oct. 21, 1971, Ser. No. 191,415

Int. Cl. A47f *5/00*

U.S. Cl. 248—359 **4 Claims**



A hanger strip for trophies which is incorporated therein whereby the trophy may be hung on a wall rather than be supported on a shelf.

3,754,725

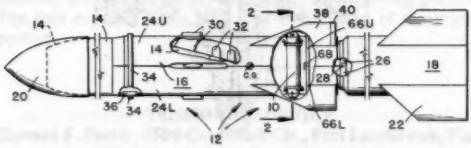
AUXILIARY ROCKET APPARATUS FOR INSTALLATION ON A MISSILE TO IMPART A ROLL MOMENT THERETO

Roy M. Kartzmark, Duarte, and John D. Skoog, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1968, Ser. No. 725,545

Int. Cl. F42b *15/14*

U.S. Cl. 244—3.23 **2 Claims**



An auxiliary rocket system for imparting a roll to a missile employing a unitary dual nozzled rocket motor. The dual nozzled rocket motor comprises a rocket tube containing a propellant grain of the type having internal burning surfaces, such as a central bore or the like, by which the propellant gases are communicated directly to both ends of the tube. Canted nozzles are affixed over the ends of the tube. The unitary dual nozzled rocket motor is mounted in a diametric disposition athwart the cylindrical body of the missile, with the canted nozzles directed in the same circumferential direction about the missile body.

3,754,726

ASSEMBLY COMPRISING A SELF-PROPELLED FINNED PROJECTILE AND ITS CASE

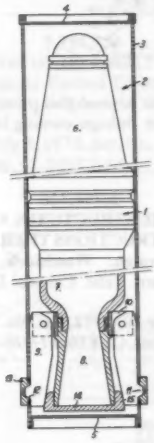
Maurice Rusbach, Vernier-Geneva, Switzerland, assignor to Sarmac S. A., Carouge-Geneva, Switzerland

Filed June 28, 1971, Ser. No. 157,360

Claims priority, application Switzerland, July 10, 1970, 10464/70

Int. Cl. F41f *3/04*; **F42b** *13/32*

U.S. Cl. 244—3.28 **12 Claims**



The invention relates to an assembly comprising a self-propelled finned projectile and its case that is successively used as a container and as a launching tube. This assembly is fitted at its rear end with an insertable member which can be ejected under the effect of the thrust of the propellant gases of the projectile and which locks at least one movable part of a coupling, that is carried by the rear end of the said projectile, to a fixed part of this coupling that is carried by the rear end of the case. All the elements of this fixed coupling part which projects into the interior of the case are ejected under the effect of the thrust of said gases.

3,754,727

AILERON CONTROLS

Bradford P. Donovan, Lakewood, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

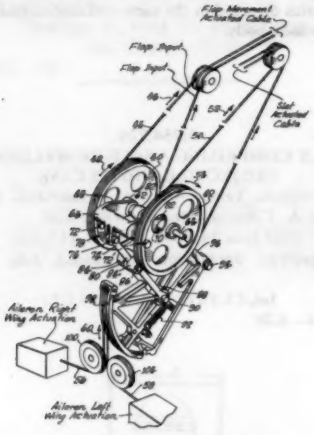
Filed Apr. 28, 1971, Ser. No. 138,087

Int. Cl. B64c *9/00*

U.S. Cl. 244—90 R **8 Claims**

A flap or slat extension controlled mechanism for engaging outboard ailerons of an aircraft during the initial part of the extension, with a capability of absorbing additional flap or slat extension input. This structure consists of a latch dwell mechanism which comprises a rotary input member, a rotary output member, a pitman of the overcenter linkage type, and a

fixed abutment whereby upon rotation of the input member up to a certain angle of rotation, the output member rotates in



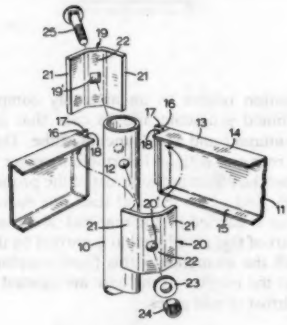
proportion thereto but beyond that point dwells as a result of the pitman overcenter linkage coming into contact with the abutment member.

3,754,728

TABLE FRAME STRUCTURES AND CORNER CONSTRUCTIONS THEREFOR

Robert Walter Bowman, Woodstock, Ontario, Canada, assignor to Standard Tube Canada Limited, Woodstock, Ontario, Canada

Filed June 20, 1972, Ser. No. 264,445
Int. Cl. F16m *11/16*
U.S. Cl. 248—188 **10 Claims**



A corner construction for a table comprises an upright leg, a pair of horizontal side frame members, and means for clamping the side frame members into end abutting relation to the leg. The clamping means comprises a pair of clamping members, each clamping member comprising a flanged plate the flanges of which subtend an angle which is supplementary to the angle subtended between the flanges of the other plate, said angles defining the angle subtended between the side frame members when the latter are clamped in position.

ERRATUM

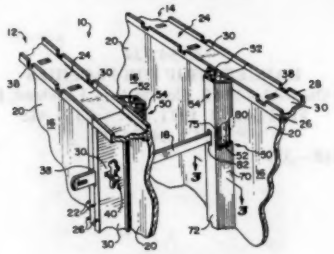
For Class 248—359 see:
Patent No. 3,754,724

3,754,729

GROOVE-FORMING PATTERN ASSEMBLY FOR A CONCRETE WALL FORM STRUCTURE

James D. Maynen, Arlington Heights, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed Dec. 27, 1971, Ser. No. 212,440
Int. Cl. E04g *11/08*
U.S. Cl. 249—40 **3 Claims**



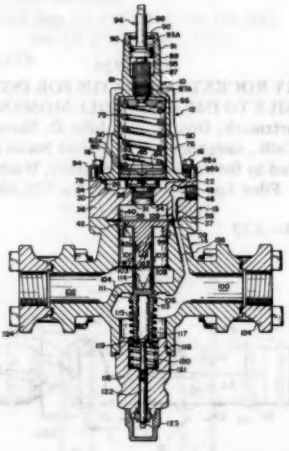
A two-piece groove-forming pattern assembly adapted for use in connection with a concrete wall form structure and including a base piece adapted to be nailed in position on the form structure, and a pattern piece adapted to be applied to the thus positioned base piece by a snap-on operation.

3,754,730

PRESSURE REFRIGERANT REGULATOR

John D. Nilles, Roselle; Robert S. Hunka, Cicero, and Raymond E. Downen, Berwyn, all of Ill., assignors to Refrigerating Specialties Company, Broadview, Ill.

Filed May 1, 1972, Ser. No. 248,927
Int. Cl. F25b *19/00*; F16k *31/12*
U.S. Cl. 251—28 **26 Claims**

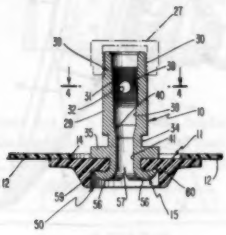


A pressure regulator for upstream or downstream refrigerant pressure has its bonnet and main valve assemblies secured to an intermediate member which is provided with selectable conduits to form a basic unit by which the operation of the regulator can be variously controlled and modified with external components interchangeably attached thereto.

3,754,731
INFLATION MANIFOLD VALVE AND FLANGE ASSEMBLY

Glenn H. Mackal, Saddle River, and George E. Lardner, Hawthorne, both of N.J., assignors to Halkey-Roberts Corporation, Paramus, N.J.

Filed Jan. 18, 1972, Ser. No. 218,669
Int. Cl. F16l 5/02; B21d 39/18
U.S. Cl. 251—145 **9 Claims**

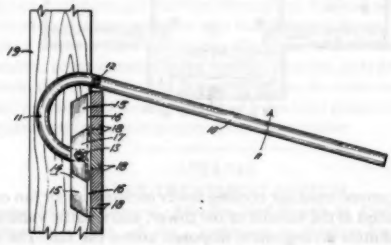


An assembly of valve body and mounting flange connected and sealed together by a novel crimped joint which strongly resists turning of the valve body relative to the flange. The valve body, for example, may be adapted for mounting in an inflation manifold, and the flange may be adapted for being sealed to the wall of an inflatable article at an opening through such wall. The invention includes a novel method of and an apparatus for forming the crimped joint.

3,754,732
BOARD-STRIPPING TOOLS

John B. Olson, 511 Tennyson St., Denver, Colo.

Filed Sept. 7, 1971, Ser. No. 178,013
Int. Cl. B66f 3/00
U.S. Cl. 254—131 **3 Claims**



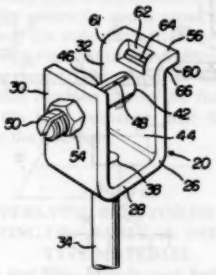
A straight tubular handle one extremity of which is arcuately bent back to form a hook-shaped, semi-circular, prying portion therebeing support-contacting fulcrum elements projecting oppositely outward from the handle adjacent the prying portion and an elongated, board-contacting foot member medially pivoted on the free extremity of the prying portion. The foot member being rotatable in the plane of the prying portion.

3,754,733
TENSIONING DEVICE

Howard F. Foster, 4500 Cavendish Cir., Fort Lauderdale, Fla.

Filed May 1, 1972, Ser. No. 248,892
Int. Cl. A63b 61/04; B65d 63/00
U.S. Cl. 254—161 **8 Claims**

In a tensioning device for a flexible element including a stem and a frame having spaced, parallel legs with axially aligned openings therein, the combination therewith of a lip projecting outward from one of the legs adjacent to the opening therein, an apertured bolt extending through the openings and having an enlargement with a flat side to bear against the lip for locking the bolt against rotation, and means at the other

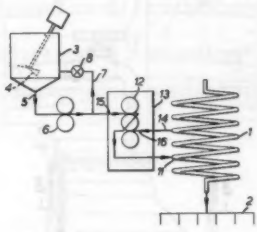


end of the bolt to retain it against axial movement. Another opening is provided adjacent the lip to receive a portion of the enlargement.

3,754,734
COLORATION OF HOT MELT POLYMERS

John Hoyle, and Thomas Reuben Griffin, both of Kegworth, near Derby, England, assignors to Slack & Parr Limited, Kegworth, England

Filed July 8, 1971, Ser. No. 160,812
Int. Cl. B01f 5/14, 13/10
U.S. Cl. 259—4 **2 Claims**



The invention concerns the coloration of hot melt polymers by direct injection of a dye into the polymer stream during polymerization, e.g., before feed to a spinning machine.

A feed pump raises the dye pressure to approximate to that of the polymer at the injection point and a gear or turbine pump provides and controls continuous flow injection of the dye from the feed pump into the polymer stream.

A three gear pump in a temperature-controlled zone is preferably used for dye injection and the polymer is bled upstream of the injection point for premixing with the dye in the three gear pump.

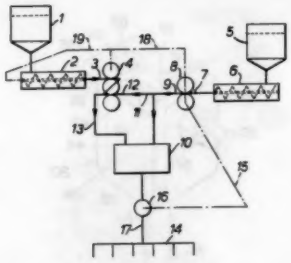
3,754,735
POLYMER COLORATION

John Hoyle, and Thomas Reuben Griffin, Kegworth, Near Derby, England, assignors to Slack & Parr Limited, Kegworth, England

Filed July 8, 1971, Ser. No. 160,813
Claims priority, application Great Britain, July 8, 1970, 33,247/70
Int. Cl. B01f 13/10, 15/04, 5/14
U.S. Cl. 259—4 **3 Claims**

The invention concerns the coloration of hot melt polymer by direct injection of a dye into a stream of the polymer after or in a late stage of polymerisation e.g., before feed to a spinning machine.

Separate pressure-balanced continuous flow metering pumps respectively feed melted undyed polymer and melted concentrated-colour-dyed polymer to a mixer and the pumps



are controlled to run in a speed relationship adjustable for colour and colour constancy. A three stage gear pump is preferably used for the colour-dyed polymer, undyed polymer being bled to the second inlet of this pump for premixing.

3,754,736

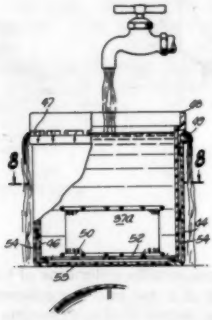
FILM DRYER

Louis D. Statham, and Walter H. Eisele, both of Oxnard, Calif., assignors to Statham Instruments Inc., Oxnard, Calif.

Division of Ser. No. 853,750, Aug. 28, 1969, Pat. No. 3,650,050. This application Dec. 6, 1971, Ser. No. 205,280

Int. Cl. B01f *7/08*

U.S. Cl. 259—18 **1 Claim**



A dryer assembly particularly designed for use by photographers who do their own developing, comprising a closed system isolated from the ambient environment, containing a desiccant space and an article-containing space suitable to receive film strips, and means to circulate the air in closed cycles through the article space, and desiccant contained in said desiccant space.

3,754,737

DIRECT GEAR DRIVE FOR TRUCK MIXER DRUM

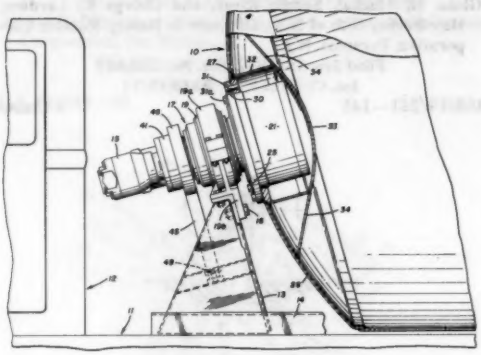
John A. O'Dea, Columbus, Ohio, assignor to The Jaeger Machine Company, Columbus, Ohio

Filed Feb. 1, 1972, Ser. No. 222,585

Int. Cl. B28c *5/18*

U.S. Cl. 259—177 A **16 Claims**

A direct gear drive for a mixer or agitator of the type in which the drum is mounted for rotation on a transporting vehicle, usually a truck. The power unit may be a hydraulic motor mounted directly behind the cab of the truck and the present invention provides a direct gear drive between that motor and the rotatable drum. This gear drive is in the form of a transmission of the planetary gear type, and, according to this invention, part of the transmission is disposed within the adjacent end of the drum itself, along with means for adequately protecting it from the contents of the drum, or in an exterior space recessed within the contour of the end of the drum.



3,754,738

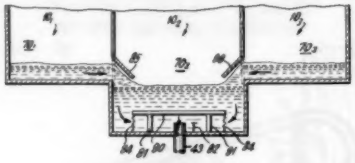
COOLING TOWER APPARATUS

Benjamin V. Blazer, Paterson, and Mahmoud S. El-Tahry, Passaic, both of N.J., assignors to Blazer Corporation, East Rutherford, N.J.

Continuation-in-part of Ser. No. 9,794, Feb. 9, 1970, Pat. No. 3,637,195, which is a continuation-in-part of Ser. No. 742,567, July 5, 1968, Pat. No. 3,494,109. This application Dec. 3, 1971, Ser. No. 204,552

Int. Cl. B01f *3/04*

U.S. Cl. 261—30 **2 Claims**



An improved modular cooling tower includes an air fan centrally located at the bottom of the tower, and a baffle vane and pivoted shutter arrangement disposed above the fan. The fan generates an air flow which passes through the baffles and vanes to react with a heated liquid flowing downward through the tower via a plurality of evaporating surfaces. The shutter structure is adapted to pass the fan generated air flow for cooling purposes while preventing the escape of fluid or vapor laden air from the tower fan orifice, thus obviating a potentially hazardous condensation condition.

In accordance with other aspects of the present invention, improved sump, fan and drive apparatus is provided to accommodate plural module installations.

3,754,739

CARBURETOR AIR/FUEL DISTRIBUTION CONTROL

George W. Buike, Plymouth, and William P. Haboush, II, St. Clair Shores, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

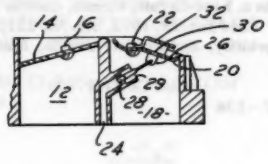
Filed July 21, 1971, Ser. No. 165,423

Int. Cl. F02m *19/04*

U.S. Cl. 261—50 A **10 Claims**

The air valve of a dual stage carburetor has a tapered fuel metering rod secured to it and movable as a function of air

valve movement to increase fuel flow; the fuel inducted passes through a hole in the air valve and splashes against a member that deflects the fuel downwardly to provide good fuel and air distribution on both sides of the valve; the splash member and



air valve together act as a venturi at higher engine speed air flows to provide a greater than normal fuel metering signal at the fuel nozzle, thereby providing greater fuel delivery volume at the higher engine speeds.

3,754,740

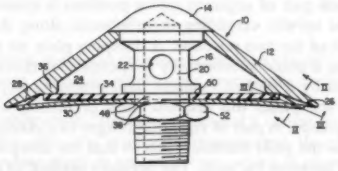
GAS DISTRIBUTOR

Louis H. Piper, Richmond, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 18, 1971, Ser. No. 116,495

Int. Cl. B01f *3/04*

U.S. Cl. 261—124 **6 Claims**



A conical chamber having a serrated bottom edge is provided with a centrally and upwardly supported bottom plate in order to distribute gas bubbles throughout a liquid when a gas is introduced under pressure into the chamber. In one embodiment, a second plate contacting the inner wall of the conical chamber, or an annular ledge formed thereon, acts as a check valve in the event of a gas pressure failure. In another embodiment, a resilient sleeve fitted about a gas inlet pipe having only circumferential openings acts as the check valve.

3,754,741

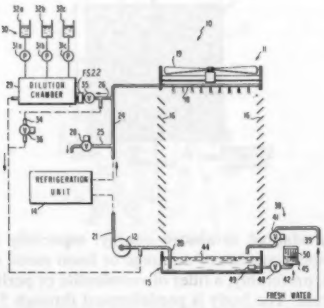
WATER TREATMENT SYSTEM

Chester M. Whitehurst, Atlanta, and Frank D. Parker, Jr., Chamblee, both of Ga., assignors to Parker Engineered Chemicals, Inc., Atlanta, Ga.

Filed Sept. 28, 1971, Ser. No. 184,464

Int. Cl. C10k *1/08*

U.S. Cl. 261—151 **9 Claims**



A water treatment system for large capacity air conditioning systems or similar heat exchange systems which include a water reservoir, a refrigeration unit, a cooling tower for spraying the water to the reservoir, and water flow means for moving the recirculating water from the reservoir through the refrigeration unit to the cooling tower, and back to the reservoir. Water makeup means is provided for adding additional fresh water to the reservoir, and a water drain system functions to drain away the stale water from the reservoir. Chemical additives pumps function to add chemical compositions to the recirculating water. The chemical additive pumps and water drain system function during the flow of recirculating water through the heat exchanger and during the flow of makeup water to the reservoir.

3,754,742

KILN WITH OVERLYING BEDS FOR DRYING, BURNING AND SINTERING OF GRANULAR AND/OR SLUDGE-TYPE MATERIAL

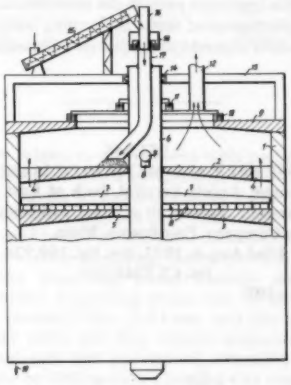
Alfred Kryczun, and Theo Manshausen, both of Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Aug. 9, 1971, Ser. No. 170,086

Claims priority, application Germany, Sept. 26, 1970, P 20 47 518.7

Int. Cl. F27b *1/02, 9/16*

U.S. Cl. 432—95 **7 Claims**



A kiln with overlying beds for drying, burning and sintering granular and/or sludge-type material is provided with a centrally arranged vertical hollow rotatable shaft having outwardly extending raking arms thereon for distributing the material to be treated over the beds. The material to be treated is fed above the kiln into a fixed vertical pipe which extends into the upper end of a vertical distribution pipe arranged within the rotatable hollow shaft. The lower end of this vertical pipe is deflected laterally and passes through the wall of the vertical shaft and delivers the material to be treated to the uppermost bed while rotating with the hollow shaft. From the uppermost bed the material descends to the next lower beds through suitable apertures in the periphery and the center portions of the beds until it is finally discharged from the lower end of the kiln.

3,754,743

SILVER RECOVERY FROM PHOTOGRAPHIC WASTES

Edward B. Johnson, 4654 34th St. North, Arlington, Va.

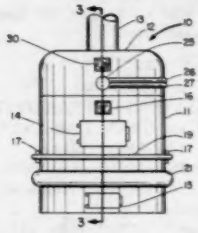
Division of Ser. No. 879,144, Nov. 24, 1969, Pat. No. 3,671,222. This application Dec. 29, 1971, Ser. No. 213,564

Int. Cl. F27b *17/00*

U.S. Cl. 266—24 **4 Claims**

An apparatus for the rendering of silver from photographic waste in which the film or other waste is ignited and brought

up to a satisfactory burning temperature in a primary chamber and maintained at this temperature until the film or waste is burned by controlling the amount of oxygen supplied to the primary chamber. During the ignition and burning of the photographic waste the smoke and particulate matter is directed to a secondary chamber where it is subjected to burning at a temperature that is higher than that in the primary chamber. After the photographic waste is burned, the silver bearing ash is cooled and removed from the primary chamber. The ash is then processed by conventional techniques to refine the silver. This apparatus permits the economical rendering of silver from photographic waste by burning with the elimination or reduction of smoke and other air pollutants.



3,754,744

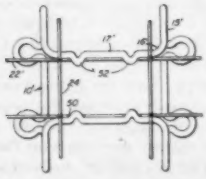
SPRING ASSEMBLY AND METHOD OF MANUFACTURE

Fred A. Ciampa; Angelo Serafini, both of East Boston, and Louis Mazzarella, Boston, all of Mass., assignors to Standard Box Spring Company, East Boston, Mass.

Filed Aug. 6, 1971, Ser. No. 169,724

Int. Cl. F16f 3/02

U.S. Cl. 267—101 **10 Claims**



A spring assembly includes a top mesh comprising two transverse groups of wires and a border frame, which are welded together at points of intersection. The assembly also includes a number of compression springs, either coils, saddle-shaped springs, or other types. One of the groups of wires is formed with a series of bights located between the intersections of the wires, and these wires are arranged in adjacent pairs whose bights extend in opposite directions. Each of the springs has two upper portions for attachment to the mesh, and these are spaced apart a different distance than the adjacent wires, but substantially the same as the distance between the bights of adjacent wires. The springs are assembled by deflecting them or the adjacent mesh wires enough to permit the attachment portions of the springs to pass between the bights and abut against the mesh wires. The bights are then allowed to return to their original form, in which they engage the spring attachment portions to secure them in place on the mesh.

3,754,745

ARRANGEMENT FOR THE MECHANICAL DAMPING OF COIL SPRINGS IN DEVICES FOR THE PRODUCTION OF ARTIFICIAL REVERBERATION

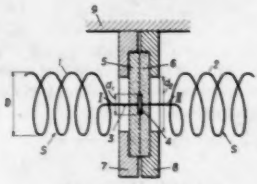
Werner Fidi, Baden near Vienna, Austria, assignor to AKG Akustische u. Kino-Gerate, Vienna, Austria

Filed Jan. 28, 1972, Ser. No. 221,583

Claims priority, application Austria, Mar. 19, 1971, A 2414/71

Int. Cl. F16f 7/00

U.S. Cl. 267—136 **12 Claims**



A spring arrangement, for use in an artificial reverberation device, includes a mechanically damped, torsionally vibratory, helical spring which is sub-divided into at least two spring portions. Each pair of adjacent spring portions is interconnected by a rigid spindle extending therebetween along the longitudinal axis of the two portions. A damping plate on each spindle lies in a plane substantially perpendicular thereto, and is embraced by a pair of resilient pads engaging opposite surfaces of the plate, the resilient pads preferably comprising foamed plastic. A pair of rigid diaphragm-like clamping members press the pads therebetween so that the damping plate is clamped between the pads. The pressure applied to the pads is preferably adjustable, and the damping members have apertures through which the spindle extends, with these apertures having a diameter smaller than that of the helical spring. The damping plate may have various configurations.

3,754,746

MECHANICAL DAMPING STRUCTURE

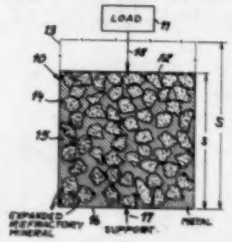
Wolfgang Thiele, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 7, 1971, Ser. No. 187,400

Claims priority, application Germany, Oct. 10, 1970, P 20 49 918.7

Int. Cl. F16f 1/36

U.S. Cl. 267—151 **14 Claims**



A body adapted to absorb energy, especially a shock or force damper, consists of a sponge or foam metal matrix with pores and, preferably, a filler of vermiculite or perlite in an expanded state. The body is predeformed through 5 to 35 percent of its original volume before it is employed as a shock or force damper.

3,754,747

APPARATUS FOR WIDTHWISE CLAMPING WORKPIECES IN MACHINE TOOLS AND THE LIKE

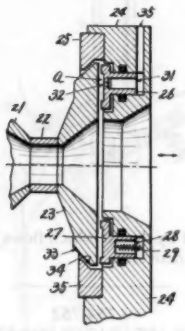
Hiromiti Tateisi, and Mituo Tamura, both of Iwata-shi, Sizuoka-ken, Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

Filed May 5, 1971, Ser. No. 140,367

Claims priority, application Japan, Dec. 25, 1970, 45/129784

Int. Cl. B23q *3/08*; B24b *41/04*

U.S. Cl. 269—20 3 Claims



The present invention provides a method of and apparatus for widthwise clamping workpieces in machine tools and the like wherein a workpiece is rotatably supported between a clamp member on the stationary side and a clamp member on the movable side, the principal arrangement thereof being such that when there is no workpiece which is clamped, the clamp member on the movable side is supported in its centered state whereas when a workpiece is clamped, the clamp member on the movable side is spaced apart from a centering portion and is floatably supported by a hydrostatic bearing with respect to a pressure plate which provides a clamping force. The invention also provides methods of and apparatus for widthwise clamping workpieces in machine tools and the like comprising sub-arrangements based on said principal arrangements. Advantages and details in arrangement will be made clear.

3,754,748

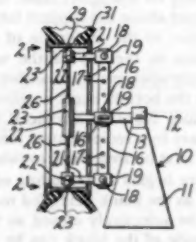
APPARATUS FOR SUPPORTING TIRE RIM FOR ROTATION IN PREDETERMINED PLANE

Hugh M. Parker, 718 Cherokee St., Talladega, Ala.

Continuation-in-part of Ser. No. 821,920, May 5, 1969, Pat. No. 3,589,705. This application June 14, 1971, Ser. No. 152,855

Int. Cl. B60b *29/00*; B25h *5/00*; B23q *3/08*

U.S. Cl. 269—20 7 Claims



Apparatus supporting tire rim for rotation in a predetermined plane including a supporting spindle extending perpendicular to said predetermined plane. A support member is operatively connected to and supported from spindle for rotation about the axis of rotation of the spindle. Angularly spaced inflatable members are carried by the support members with outer surfaces thereof engagable with rim, upon inflation of inflatable members.

3,754,749

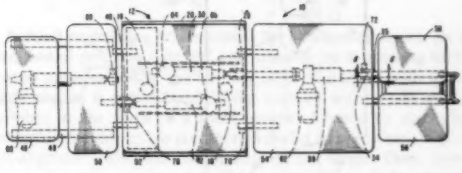
MULTI-ARTICULATED TABLE

John Jeffrey Lyon; Merrill K. Lyon, both of Northridge, and L. Noel Stipkovich, Granada Hills, all of Calif., assignors to Medical Engineering Development Company, Granada Hills, Calif.

Filed June 25, 1971, Ser. No. 156,811

Int. Cl. A61g *13/00*

U.S. Cl. 269—325 3 Claims



This patent relates to an improved table useful in medical and related practices. More particularly, this invention comprises a table having a central portion which includes a flat generally horizontally disposed base, extending upwardly from said base, spaced apart first and second extendible supporting means, a first cushion supporting means pivotally attached to said extendible supporting means whereby said first and second extendible supporting means can be simultaneously extended to vertically raise and lower said first cushion supporting means while said first cushion supporting means is horizontal and said first and second extendible supporting means can also be differentially extended with respect to each other to tip said first cushion supporting means at an angle with respect to the horizontal; a second cushion supporting means connected by pivotal attachment to the upper end of said central portion and at one side thereof, a third extensible means carried by said central portion for providing pivotal movement of said second cushion supporting means around said pivotal attachment, a third cushion supporting means connected by pivotal attachment to the second cushion supporting means, extensible means carried by said second cushion supporting means for providing pivotal movement of said third cushion supporting means around said second cushion supporting means whereby said second and third cushion supporting means can be pivoted simultaneously or individually above and below the horizontal; a fourth cushion supporting means connected by pivotal attachment to the upper end of said central portion and at the opposite side thereof, a fourth extensible means carried by said central portion for providing pivotal movement of said fourth cushion supporting means around said pivotal attachment, a fifth cushion supporting means slidaby attached to said fourth cushion supporting means, extendible means carried by said fourth cushion supporting means for providing coplanar movement of said fifth cushion supporting means with respect of said fourth cushion supporting means to increase or decrease the distance therebetween, said fourth and fifth cushion supporting means being adapted to be simultaneously pivoted above and below the horizontal around said central portion.

3,754,750

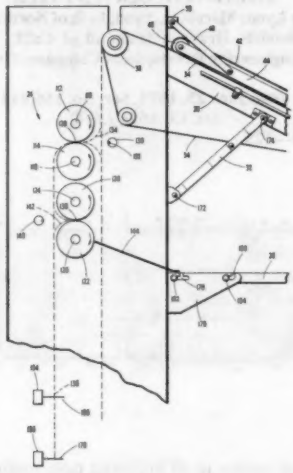
METHOD AND APPARATUS FOR FOLDING SHEETS

Robert L. Sjostrom, 133 N.W. 16th St., Boca Raton, Fla.

Filed Feb. 24, 1970, Ser. No. 13,277

Int. Cl. B65h *45/04*

U.S. Cl. 270—69 **21 Claims**



A compact sheet folder for longitudinal folding of ironed or "no-iron" sheets, including means for feeding the unfolded sheet into the machine with one edge of the sheet leading the remaining portions of the sheet. The feeding device advances the sheet to a number of parallel horizontal rollers which are arranged in a generally vertical alignment. The sheet moves downwardly from the feeding arrangement to the rollers and is passed transversely and repeatedly through the rollers to effect a number of folds. The last fold is made by a pair of rollers which advance the sheet horizontally toward the side of the machine at which the sheet was originally fed in. This enables the operator to both load and unload the machine from the same operating station. A cross folding device may be located at the unloading station to receive automatically the longitudinally folded sheets. The folder may be connected to an automatic ironer which delivers ironed sheets to the feeding means.

3,754,751

SUCTION DEVICE FOR PICKING UP SHEETS

Federico Capetti, and Giancarlo Terzuolo, both of Turin, Italy, assignors to Ing. C. Olivetti & C. S.p.A., Turin, Italy

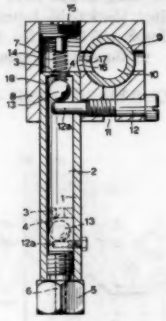
Filed Mar. 2, 1971, Ser. No. 120,215

Claims priority, application Italy, Mar. 13, 1970, 67858 A/70

Int. Cl. B65h *3/08*

U.S. Cl. 271—26 R **3 Claims**

A suction device used for picking up sheets, for example in a paper printing machine, has a valve which automatically closes, cutting off the suction device from a suction manifold, when the mouth of the device is not covered by a sheet, thereby preventing unnecessary loss of suction in the manifold, which usually serves a number of suction devices.



The valve is closed by the air which flows through the device when its mouth is uncovered.

3,754,752

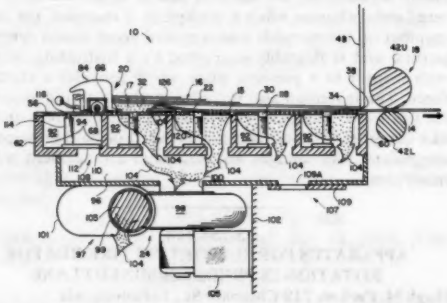
METHOD OF AND APPARATUS FOR FEEDING BLANKS

William S. Thayer, c/o Kappers Company Inc., Kappers Building, Pittsburgh, Pa.

Filed Dec. 22, 1971, Ser. No. 210,724

Int. Cl. B65h *1/06*

U.S. Cl. 271—132 **30 Claims**



A methof of and apparatus for feeding the bottom blank of a stack of blanks into adjacent processing machinery wherein the leading edge of a stack is supported adjacent the processing machinery on a support table; the trailing edge of the stack is supported above the support table; subatmospheric pressure is applied to the underside of the bottom blank through perforations in the top of the table leading to a number of selectively operable subchambers beneath the perforated top to urge the bottom blank downward toward the table; and, the bottom blank is advanced into the adjacent processing machinery by a reciprocating feeder bar simultaneously exposing the next bottom blank to subatmospheric pressure which exposure begins at its trailing edge and continues to its leading edge as the blank being fed moves forward. The subchambers can be selectively closed so that selected portions of the underside of the blank can be exposed to subatmospheric pressure. Stop-feed means are provided for lifting the trailing edge of the stack above the feeder bar in the event of a malfunction; the same means can be operated intermittently to skip-feed blanks at one-half the normal rate.

3,754,753

APPARATUS FOR SEPARATING AND GUIDING SHEET MEANS OF DIFFERENT THICKNESS AND WIDTH

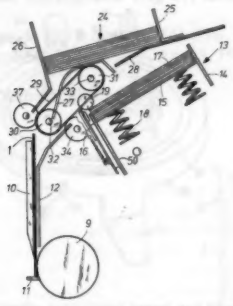
Horst Gorner, St. Georgen; Manfred Kohler, Monchweiler; Alois Limberger, Gruningen, and Walter Usbeck, Villingen, all of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany

Filed Oct. 13, 1971, Ser. No. 188,913

Claims priority, application Germany, Oct. 14, 1970, P 20 50 370.2

Int. Cl. B65h *3/04*

U.S. Cl. 271—34 11 Claims



Apparatus by which single cards, or pads consisting of several sheets and having a width different from the width of the cards, are transported from a magazine to a printing station, is provided with means for manually setting the card knife to different thicknesses, and a movable margin guide to the different widths of the transported cards or pads.

3,754,754

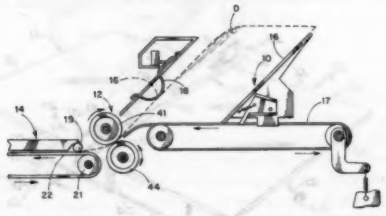
DOCUMENT SEPARATOR FOR ACCIDENTAL BUNCHING

John Allan Peterson, New Brighton, Minn., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 3, 1971, Ser. No. 204,634

Int. Cl. B65h *3/06, 3/52*

U.S. Cl. 271—36 5 Claims



A document handling device is provided with a feed arrangement having a pair of rollers arranged to cooperate in feeding documents of varying size and thickness singly and sequentially from a stack, without adjustment of the device.

3,754,755

DEVICE FOR REGISTERING SHEETS ON FEED BOARD OF SHEET FED PRINTING MACHINES

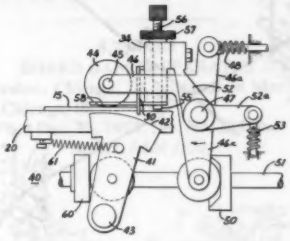
Karl-Heinz Krochert, Offenbach/Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG

Filed July 24, 1972, Ser. No. 274,609

Claims priority, application Germany, July 28, 1971, P 21 37 661.4

Int. Cl. B65h *9/00, 7/10*

U.S. Cl. 271—58 5 Claims



A sheet registering arrangement for positioning sheets on a feed board prior to take-off and transfer to a printing unit. Seated engagement of the leading edge of a sheet with front guide means is maintained during register with a side guide member in the form of a short length of fence by pivotally mounting the side guide member so that it is free to swivel into self-alignment with the lateral edge of the sheet. Thus, non-square sheets can be reproducibly registered. Light biasing of the side guide member by means of springs or the like can be used to place the member in a neutral position, when no sheet is present. The neutral position can be made adjustable so as to accommodate sheets with different characteristic angular errors.

3,754,756

THEATRICAL SCREEN FOR COMBINING LIVE ACTION AND PROJECTED PICTURES

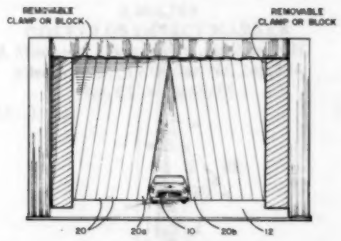
Paul Szigety, 170 Winnick Ave., Las Vegas, Nev.

Division of Ser. No. 41,209, May 28, 1970, Pat. No. 3,625,510.

This application Aug. 16, 1971, Ser. No. 172,189

Int. Cl. A63j *5/02*

U.S. Cl. 272—21 4 Claims



A theatrical screen for reflecting projected images and through which objects may pass comprises a plurality of substantially vertically extending elongated elastic strips the upper and lower ends of which strips are attached to movable guides. The guides are located within or cooperate with a guide channel and may be moved along the guide channel which extends laterally across a stage platform. Removable blocks or clamps are disposed in the upper or lower guide channels for selectively preventing movement of either the upper or lower guides. A large object such as a vehicle or the like may be moved through the screen between a pair of parted elastic strips which thereafter will return to their normal substantially vertical position.

3,754,757

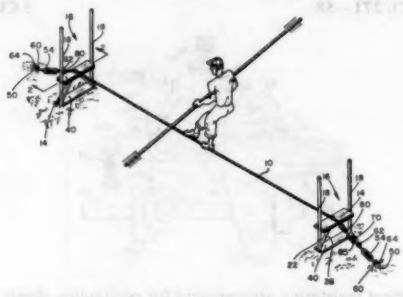
TIGHTWIRE SPORTS EQUIPMENT

Duane C. Bowen, 2551 State St., Carlsbad, Calif.

Continuation-in-part of Ser. No. 749,336, Aug. 1, 1968, abandoned. This application Jan. 21, 1971, Ser. No. 108,606

Int. Cl. A63b 23/04; A63j 7/00

U.S. Cl. 272—60 18 Claims



A cable forming a tightwire is supported above the ground at low height by a pair of spaced apart standards with the ends of the cable secured to ground anchors and stretched over the standards by turnbuckles. A tension spring is connected in the cable string to limit tension forces. The standards have platforms at about cable height and the cables are secured to the standards by U-bolts. A pair of tubes at the sides of the standard have upper ends extending substantially above the platforms to be grasped by user hands in stepping onto the tightwire and leaving the tightwire, and the lower ends of the tubes penetrate the ground, the standards having pad means bearing on the ground to limit ground penetration.

3,754,758

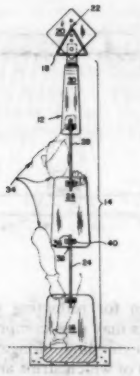
VERTICAL SWING BEAM FOR AMUSEMENT AND EXERCISE

Richard A. Hanson, 5750 Tamarack Way, Concord, Calif.

Filed July 20, 1972, Ser. No. 273,420

Int. Cl. A63b 9/00

U.S. Cl. 272—60 A 6 Claims



A normally upstanding resilient structure for amusement and excercise of children or adults comprising a plurality of interconnected, vertically, aligned, elastically bendable plate sections arranged so that the faces of the plates thereof are generally non-coplanar, and having a rotatable top plate from which a handle is suspended for the user to perform the aforementioned activity. The structure is fixedly positioned at its base but is not secured thereabove so that the structure is free to perform a swaying movement when acted upon by the weight of a user grasping the handle.

3,754,759

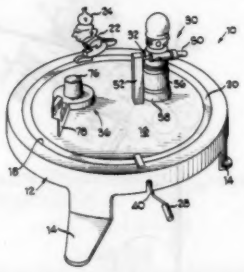
ROUND-ABOUT GAME APPARATUS

Jeffrey Dale Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 16, 1972, Ser. No. 226,738

Int. Cl. A63f 9/00

U.S. Cl. 273—1 R 17 Claims



A round-about toy game apparatus wherein the object is to knock off a moving target from its path of travel. The game generally includes a housing having a platform, a track associated with the platform defining a target path of travel, a target removably mounted on the track, a drive mechanism for moving the target relative to the platform, and a striking element adjacent the track for knocking the moving target passing thereby off the track. The striking element is in the form of an inverted L-shaped member having a horizontal leg extending over the platform at the same height as the target perpendicular to the track and a downwardly extending vertical leg. The L-shaped member is mounted on the housing so that the horizontal leg is movable between a normally retracted position away from the target path of travel and a striking position intersecting the target path of travel. The game also includes a blocking element capable of halting the progress of travel of a moving target and a spring wound timer mechanism employed to actuate the blocking element after a given amount of time.

3,754,760

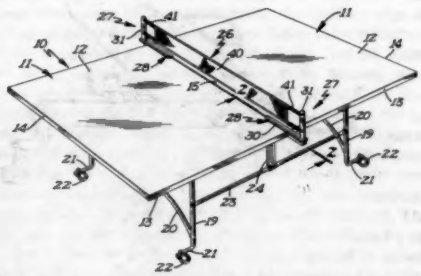
NET HOLDER DEVICE AND HOLDABLE TENNIS TABLE

Otto S. Nielsen, 4875 Sorell Ave. North, Minneapolis, Minn.

Filed June 19, 1972, Ser. No. 264,186

Int. Cl. A63b 39/00

U.S. Cl. 273—30 3 Claims



A net holder device for use with a foldable ping-pong or tennis table includes a pair of net holder structures which are

removably connected to the foldable table top sections and are swingable between an extended position and a collapsed position. Each net holder structure extends outwardly from between the table top sections and cooperates with the other net holder structure to hold the net in a taut condition. Each net holder structure is readily swingable inwardly to a collapsed position wherein the net holders are located between the table top sections when the top sections are in the folded condition. The net holders structures may also be swung to an out-of-the-way position below the table when the table is in an unfolded extended position.

3,754,761

GOLF PRACTICE DEVICE

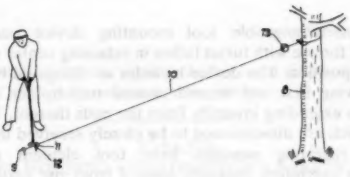
Gunther M. W. Pruss, Herzogstand Weg 27, Kochel am See, Germany

Filed Apr. 6, 1972, Ser. No. 241,576

Claims priority, application Germany, Apr. 8, 1971, P 21 17 297.4

Int. Cl. A63b *69/36*

U.S. Cl. 273—200 A **3 Claims**



A golf practice device including a golf ball which travels a restricted distance along an inclined guiding string. The ball is provided with a ring which slides along the string. A tee is integrally connected to the ring. The guiding string is slanted upwardly away from the golfer so that the ball will slide back on its own to the tee off position.

3,754,762

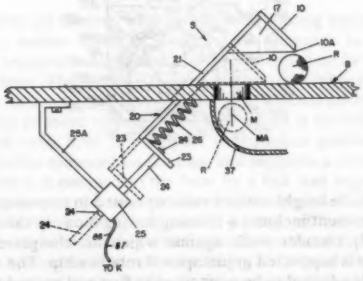
BALL SWEEPER APPARATUS FOR BALL ROLLING GAMES

Richard L. Brown, Bellevue, Nebr., assignor to Bally Manufacturing Corp., Chicago, Ill.

Filed Oct. 27, 1971, Ser. No. 193,092

Int. Cl. A63f *7/00*

U.S. Cl. 273—124 A **19 Claims**



There is provided ball sweeping apparatus adapted to be employed in proximal combination with a generally vertically extending target of ball rolling games, the ball sweeping apparatus including a transversely extending frontal-deflector member which commencing at a stationary "ready" normal-condition for the ball sweeper apparatus can move in elevation and in the longitudinal rearward direction thereby being capable of contacting a rolling ball as it approaches the vicinity of the target and ball sweeper combination and thence rearwardly longitudinally deflecting the ball toward the relatively stationary proximal target. Preferred embodiments of the ball sweeping apparatus include: longitudinal orientation means for the rearwardly deflectable ball; automatic restoration of the rearwardly displaced ball sweeper to the stable "ready" normal-condition; means for causing the frontal-deflector to preliminarily leap forwardly from the target toward an approach-in ball thereby forwardly extending the ball control area; and means for employing the frontal-deflector as a relatively low temporary barrier to the proximal target.

3,754,763

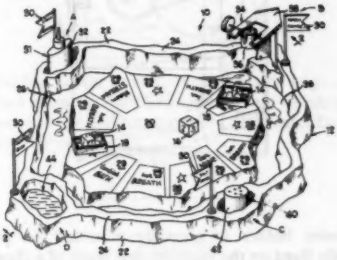
BOARD GAME APPARATUS

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 30, 1971, Ser. No. 214,060

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 B **9 Claims**



A game device of the type having a gameboard, playing pieces, and a chance device to determine the advance of the playing pieces along certain spaces on the gameboard. Each playing piece is made out of ice. The spaces provide instructional information and represent hazards that may destroy the playing piece. Associated with the gameboard are actual physical hazards which involve application to the game piece of warm water, hot air or salt according to the hazard provided for by the space. Alternatively, the playing piece may be a sugar cube or a balloon.

3,754,764

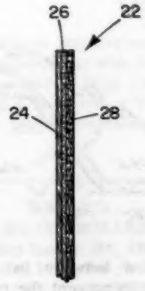
GOLF CLUB IMPACT MARKER

Frederick J. Manheck, 8 Apache Rd., Nashua, N.H.

Filed Apr. 27, 1972, Ser. No. 248,254

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 D **3 Claims**



An impact marker for golf clubs and the like. The marker is comprised of a self-contained imaging-type sheet material including minute rupturable capsules, which sheet material is

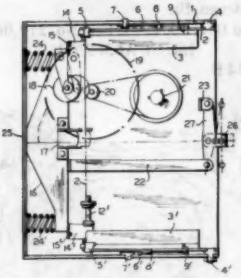
applied to the face of the club by means of a pressure-sensitive non-permanent adhesive distributed uniformly over substantially all of the back side of the sheet material. The sheet material is suitably adapted to produce an image at the exact point at which the sheet is contacted by the ball during the golfer's swing. Prior to being attached to the club, the adhesive layer is covered by an easily removed protective sheet.

3,754,765

ONE-TOUCH OPERATION CASSETTE TAPE PLAYER

Taro Tanaka, 7-12, Nishi Minecho, Ohtaku, Tokyo, Japan

Filed Aug. 23, 1971, Ser. No. 174,094
Claims priority, application Japan, Sept. 7, 1970, 45/77794
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 E **3 Claims**



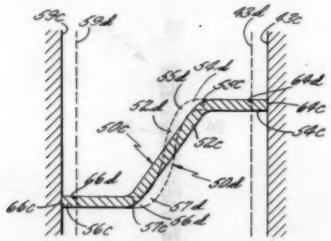
A cassette holder is pivotally mounted on pivot pins horizontally fixed on the opposite side walls of a chassis, and a pair of cassette guides are pivotally mounted on pivot pins fixed on the front end portions of the opposite side walls of the cassette holder. Further, a pair of links are vertically pivotally mounted on pivot pins on the inner surfaces of the opposite side walls of the chassis for causing a vertical pivotal movement of the cassette guides, each of the links being provided with an elongated slot at the central portion thereof for engagement with a pin provided on the corresponding side surface of the cassette holder.

3,754,766

SPRING TYPE RING SEAL

Herbert F. Asplund, South Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 11, 1971, Ser. No. 197,799
Int. Cl. F16j *15/38*
U.S. Cl. 277—236 **3 Claims**



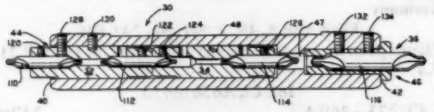
A seal is provided between two oppositely directed cooperating surfaces to prevent the radial leakage of fluid between the surfaces, the seal comprising a ring disposed between the surfaces, the ring including a truncated conical mid-section having a substantially axially extending outwardly directed flange at each end. The ring is able to accommodate relative axial movement between the surfaces by rotation about a circumferential center line located approximately midway of the conical mid-section. This mode of compression reduces bending stresses in the ring. Two of these rings can be used in combination to provide a passageway for carrying fluid across the axial gap between the cooperating surfaces.

3,754,767

INTERCHANGEABLE TOOL MOUNTING DEVICE

Gene Lee Bennett, North Madison, Ohio, assignor to Genio Tools, Inc., Mentor, Ohio

Filed Sept. 23, 1971, Ser. No. 183,090
Int. Cl. B23b *29/00, 29/26*
U.S. Cl. 279—14 **17 Claims**



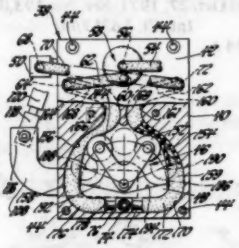
An interchangeable tool mounting device particularly adapted for use with turret lathes in retaining center drills in a desired position. The device includes an elongated body portion having first and second coaxial tool holder receiving passages extending inwardly from the ends thereof. Tool holders which are dimensioned to be closely received in the tool holder receiving passages have tool element receiving passages extending coaxially inward from the ends thereof which are adapted to closely receive different standard sized center drills. By varying the relative disposition of the tool holders within the body portion, a particular sized center drill may be placed in an operative position.

3,754,768

HEIGHT CONTROL VALVE FOR VEHICLE LEVELING

George S. Ellis, Roseville; Bernard J. Finn, Troy, and Charles H. Pinx, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1972, Ser. No. 245,498
Int. Cl. B60s *9/10*
U.S. Cl. 280—6 R **4 Claims**



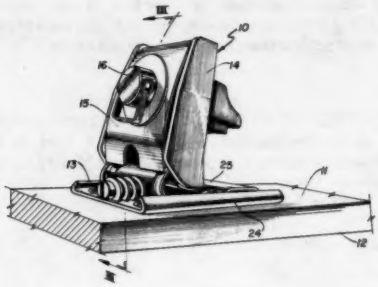
A vehicle height control valve operated in response to vehicle movement includes a housing having a cavity therein with generally circular walls against which an elongated tubing member is supported in juxtaposed relationship. The tube has two ends adapted to be connected to first and second pressure sources and is connected to an output fitting at a point intermediate the tube end. A roller assembly with angularly spaced apart roller elements engages the tubing member to control flow therethrough. A torsion shaft that operates the roller assembly twists to prevent movement of the roller assembly from a centered frictional engagement with the tube thereby to prevent valve operation in response to ordinary vehicle road movements.

3,754,769

SKI BINDING

Kenneth L. King, c/o Dovre Ski Binding, Inc., West Concord, Mass.

Filed Nov. 30, 1971, Ser. No. 203,158
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **1 Claim**



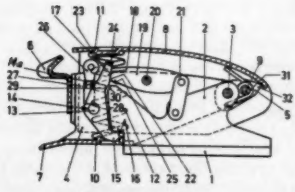
A ski binding for use against the heel of a ski boot having a large leaf spring to produce release action.

3,754,770

HEEL HOLDING ASSEMBLY FOR A SAFETY SKI BINDING

Willy Suhner, Aarauerstrasse 38, 5200 Brugg, Switzerland

Filed Aug. 3, 1971, Ser. No. 168,555
Claims priority, application Switzerland, Aug. 5, 1970, 11765/70
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **13 Claims**



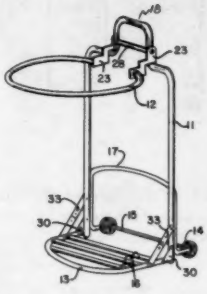
A safety ski binding wherein the heel holding assembly includes a holder which is pivoted with reference to the ski about a transverse horizontal axis when stepped on by the heel of a ski boot. The holder is overlapped by a pivotably mounted support for a retaining lever having a claw which normally engages one or more surfaces on a base which is secured to the ski to thereby hold the support in a locked position. The holder is also mounted on the base and supports a disengaging lever which is coupled to the base by a link and engages the retaining lever to prevent the latter's disengagement from the base while the holder pivots within a range of heel-retaining positions. A helical spring which operates between the support and the holder tends to resist the lifting of the heel when such heel is received in the holder. In the event of a fall, the holder is pivoted beyond a predetermined position and thereby enables the disengaging lever to permit or to cause disengagement of the retaining lever from the base. The two levers thereupon cooperate to automatically pivot the holder to a step-in position in response to expansion of the spring as soon as the claw of the retaining lever is disengaged from the base. The support can be pivoted with reference to the holder and base to permit intentional disengagement of the retaining lever.

3,754,771

BAG HOLDER

Paul B. Shagoury, 547 Nicholes St., Norwood, Mass.

Filed Nov. 26, 1971, Ser. No. 202,115
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 C **1 Claim**



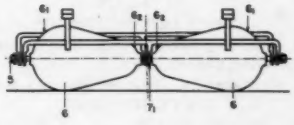
A plastic bag holder fitted to receive plastic bags commonly used in yard clean-up and known as leaf bags which is collapsible for easy storage and transportable for greater facility in its use about one's yard.

3,754,772

APPLIANCE FOR THE TRANSPORT AND LAUNCHING IN PARTICULAR FOR BOATS AND OTHER APPLICATIONS

Patrick Carn, 81 Route de Benodet, Quimper (Sud Finistere), France

Continuation-in-part of Ser. No. 889,258, Dec. 30, 1969, abandoned. This application Mar. 10, 1971, Ser. No. 122,752
Claims priority, application France, Mar. 10, 1970, 7008573
Int. Cl. B60p *3/10*
U.S. Cl. 280—47.13 B **6 Claims**



This invention relates to improvements in apparatus for transporting of boats and includes wide low pressure wheels of asymetrical shape to present a large contact area over soft ground while allowing a boat with a V-bottom hull to ride lower in the apparatus, thereby increasing the stability.

3,754,773

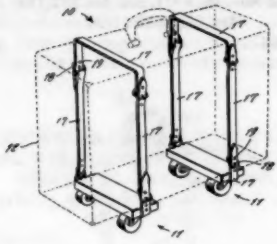
LUGGAGE ROLLERS

Michael Bruno, 6464 Dry Harbor Rd., Middle Village, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,158
Int. Cl. A45c *13/38;* **B62b** *3/04*
U.S. Cl. 280—47.13 R **2 Claims**

A pair of units attachable around a luggage so to permit the luggage to travel along a floor or other surface such as a sidewalk and which eliminates the tiring task of carrying the lug-

gage particularly when heavy, the units each consisting of a pair of roller casters on the underside of a block placable



against the underside of the suitcase, the block being secured to the suitcase by straps extended up and around the suitcase and secured together by buckles.

3,754,774

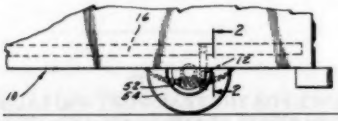
VEHICLE AXLE-FRAME LOCK

Oscar M. Nelson, 13209 Oval Dr., Whittier, Calif.

Filed Nov. 18, 1971, Ser. No. 200,039

Int. Cl. B60r *27/00*

U.S. Cl. 280—150 G **4 Claims**



There is disclosed an apparatus for locking a vehicle frame and the axle thereof in a relative position, whereby the axle will move together with the frame when manual adjustment of the vehicle is required. The apparatus comprises an adjustable depending bracket attached to the frame, the bracket being provided with an elongated, vertical slot therein to receive a bolt therethrough, the bolt being slidably mounted to a support plate secured to the axle, and the bolt being operably connected to a flexible cable for positioning the bolt in a locked mode of operation.

3,754,775

BELT ARRANGEMENT

Alverson B. Williams, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1972, Ser. No. 247,565

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **4 Claims**

A belt arrangement for restraining an occupant of a vehicle body in seated position includes a belt with one end received by an inertia responsive retractor mounted on the vehicle body adjacent an upper outboard portion of the seat back of the seat. The other end of the belt attaches a first D-ring, while an adjustable attachment secures a second D-ring to an intermediate portion of the belt. The D-rings are respectively received by a pair of buckles located at opposite sides of the seat cushion of the seat to allow use of the belt as a combination lap and shoulder belt and are received by the buckles in an opposite manner to allow use of the belt only as a lap belt. An attachment on the belt between the second D-ring and the retractor allows attachment of the first D-ring while the second D-ring remains secured to the outboard buckle to provide a storage position for the belt arrangement.

3,754,776

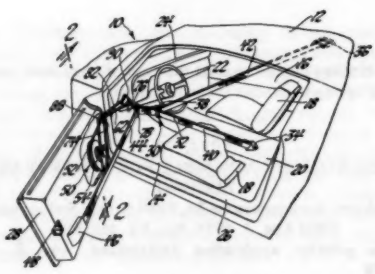
ACTUATOR FOR MOVING A BELT ARRANGEMENT

Roy S. Cataldo, Birmingham, and Edward W. Yott, St. Clair Shores, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 15, 1972, Ser. No. 253,207

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **7 Claims**



An actuator for moving a belt arrangement associated with a vehicle body door from an occupant restraining position to an easy-enter position in response to door opening movement. The actuator includes first and second pulleys mounted on the door for rotational movement with each other and having respective cable receiving spiraling portions which wind in opposite directions to each other and respectively receive first and second cables. The first cable extends from the first pulley and attaches to the belt arrangement, while the second cable extends from the second pulley and attaches to the vehicle body such that opening door movement increases the effective length of this cable between the second pulley and the vehicle body. This increase in effective length unwinds the second cable outwardly from the spiraling portion of the second pulley and rotates both pulleys such that the first cable winds inwardly onto the spiraling portion of the first pulley and pulls the belt arrangement forwardly toward easy-enter position more during the initial door opening movement than during later stages to aid occupant ingress to and egress from the vehicle body with the door in a partially open position.

3,754,777

AUTOMATICALLY OPERATIVELY POSITIONED AND STORABLE OUTRIGGER PAD

David K. Riggs, and Frank G. Smith, both of Battle Creek, Mich., assignors to American Fire Apparatus Co., Battle Creek, Mich.

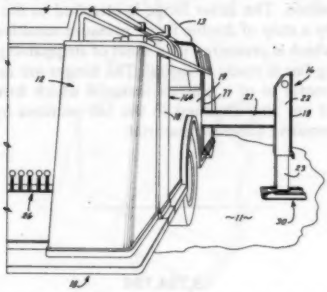
Filed Mar. 9, 1972, Ser. No. 233,209

Int. Cl. B60s *9/02*

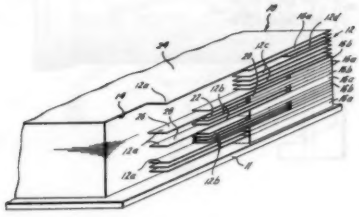
U.S. Cl. 280—150.5 **9 Claims**

An outrigger pad assembly for an extendible, vehicle stabilizing outrigger. The pad assembly is automatically carried from a position of storage within the perimeter of the vehicle to a ground-engaging position of use by extension of the

outrigger. The pad assembly includes a platelike pad or foot swivelly affixed to the bottom of the outrigger leg and translatable with respect thereto tranversely of the truck between a storage position eccentric of the outrigger leg and a use position substantially central of the outrigger leg. The pad area is a large multiple of the cross-sectional area of the outrigger leg and both the outrigger leg and pad store within and substantially flush with the sides of the vehicle.



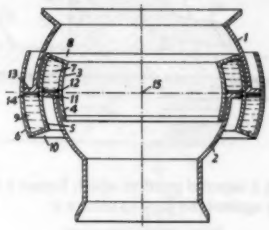
3,754,778
INDEXING MEANS AND BOOK FOR ORGANIZED HIERARCHICAL SUBJECT MATTER
John J. Lenahan, 5107 Mimosa Dr., Bellaire, Tex.
Filed Feb. 22, 1972, Ser. No. 228,041
Int. Cl. B42f *21/04*
U.S. Cl. 283—38 **10 Claims**



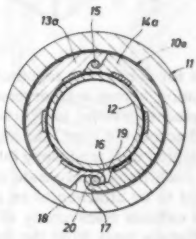
A new and improved indexing means and book for organized hierarchical subject matter provides rapid access to the text for the student or user with an overview of the organization of the subject matter therein, while allowing students to progress in individual sequences through the book in accordance with their understanding of the subject matter.

3,754,779
FLEXIBLE JOINTS
Joseph S. Peress, Moorcroft, Lammas Ln., Esher Surrey, England
Filed Aug. 30, 1971, Ser. No. 175,978
Claims priority, application Great Britain, Sept. 4, 1970, 42,619/70; Nov. 25, 1970, 56,174/70
Int. Cl. F16l *27/00*
U.S. Cl. 285—11 **22 Claims**

A flexible joint for use with apparatus subjected to an internal/external pressure differential for example, submersible diving apparatus. The joint comprises an annular female member into which a relatively angularly movable annular male member can extend and which members are coupled together by an annular connecting member. The couplings between the female member and the connecting member, and between the connecting member and the male member each include an annular piston located within a part-spherical closed annular cylinder filled with fluid.



3,754,780
REMOTE CONTROL LOCKING CLAMP FOR DETACHABLY INTERCONNECTING TWO CONCENTRIC ELEMENTS
Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Aug. 30, 1971, Ser. No. 175,891
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **15 Claims**

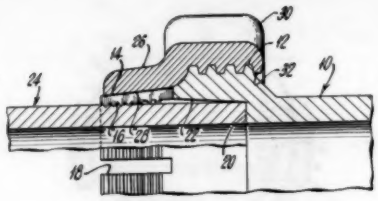


A remote control retractable locking clamp for detachably telescopically connecting a template cylindrical element of an offshore drilling tower with a subsurface structural cylindrical inner pile element, including an elongated circular clamp with tapered overlapping ends positioned between the two cylindrical elements and encircling the pile element. The clamp ends are hook shaped so that the pushing in of a tapered pin therebetween with a reversible motor remotely controlled on the surface increases the overlap and accordingly causes the clamp to grip the outer sleeve element for detachably locking the sleeve to the pile. Pulling out of the tapered pin causes contraction of the clamp for unlocking the sleeve from the pile.

3,754,781
THERMPOLASTIC PIPE COUPLING
Kevin Conroy, Acton, Ontario, Canada, assignor to Esso Research and Engineering Company, Linden, N.J.
Filed Sept. 13, 1971, Ser. No. 179,686
Int. Cl. F16l *21/06*
U.S. Cl. 285—322 **2 Claims**

A coupling for use in joining lengths of plastic pipe compris-

ing a cylindrical body having a socket to receive and securely grip the end of a piece of pipe. The body is engaged by a



locknut having a tapered portion which forces a threaded collet on the body against the pipe to secure it.

3,754,782

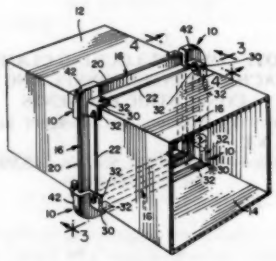
CORNER DEVICE FOR DUCT JOINTS

Ernest P. De Lord, Prospect Heights, Ill., assignor to Cleats Mfg. Inc., Chicago, Ill.

Filed June 18, 1971, Ser. No. 154,284

Int. Cl. F16l *25/00*

U.S. Cl. 285—424 **3 Claims**



A corner device for connecting together rectangular ducts in end-to-end relation across a transverse joint comprising angle means adapted to extend longitudinally of the ducts along a corner and across the joint. The angle means includes a pair of flanges adapted to extend along interconnecting walls of the ducts, and each flange has inside end surfaces at opposite ends adapted to be attached to an adjacent duct wall. Corner rib means extends transversely of said angle means outwardly of the flanges away from the duct walls along the joint and includes a rib receiving recess defined therein for receiving an end portion of a joint connector used for interconnecting the adjacent edges of the duct walls.

3,754,783

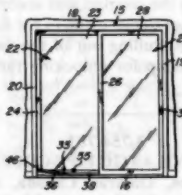
LOCKING DEVICE FOR A SLIDING DOOR

John L. Childers, 191 Blackstone Dr., Centerville, Ohio

Filed Jan. 20, 1972, Ser. No. 219,481

Int. Cl. E05c *17/32*

U.S. Cl. 292—263 **2 Claims**



A sliding door panel is supported by a base track member for sliding movement between open and closed positions adjacent a set of opposing vertical jamb members. An elongated locking bar includes two bar sections connected by a hinge, and one of the bar sections is pivotally connected by another hinge to one of the jamb members to provide for movement of the bar sections between a collapsed position adjacent the one jamb member and a generally aligned over-center position extending between the jamb member and the door panel in its closed position. The latter hinge is attached to the one jamb member by a strip of double faced pressure sensitive adhesive material which is protected by a sheet of strippable paper until the locking bar is ready to install. The hinges are constructed of either metal or of a plastics material which form integral hinges and are also attached to the bar sections by strips of pressure sensitive adhesive material.

3,754,784

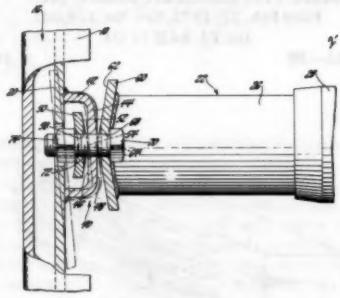
VEHICLE BUMPER MOUNTING ARRANGEMENT

Howard G. Heinig, Flint, and Donald W. Peterson, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,265

Int. Cl. B60r *19/04*; **F16c** *5/00*

U.S. Cl. 293—99 **2 Claims**



A bumper bar is mounted on an automobile by a pair of collapsible energy absorbing mounting units attached to the vehicle frame. Bracket assemblies are provided to attach the bumper bar to the mounting units and include knife-edge like bearing surfaces adapted to permit limited transverse cocking of the bumper bar during uneven collapses of the mounting units.

3,754,785

PORTABLE BAG HOLDER

John Ernest Anderson, 182 Park Lawn Rd., Toronto 18, Ontario, Canada

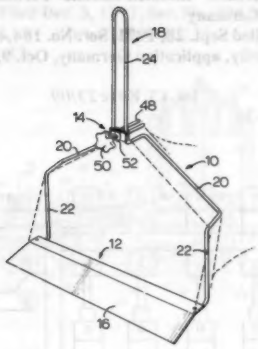
Filed Dec. 30, 1970, Ser. No. 102,797

Int. Cl. A47f *13/06*

U.S. Cl. 294—19 R **1 Claim**

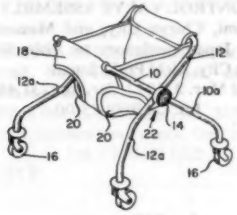
A portable bag holder for detachably mounting a flexible garbage bag thereon is described. Several embodiments described have, as common features, a handle, the provision

of spaced supports for the mouth of the bag, devices for tensioning the mouth of the bag about said supports and a lip



located to extend from the inside to the outside of the bag mouth for facilitating loading of refuse into the bag directly off the ground.

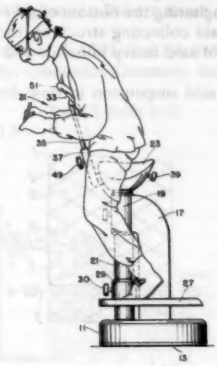
3,754,786
PLAYSEAT WITH FINGER GUARD
Raymond Boucher, Dothan, Ala., and Robert Boudreau, Bedford, Pa., assignors to Hedstrom Company, Bedford, Pa.
Filed Jan. 12, 1972, Ser. No. 217,137
Int. Cl. A47d *13/04*
U.S. Cl. 297—5 **5 Claims**



A children's playseat comprises two inverted U-shaped members whose legs are pivoted together to form a pair of spaced-apart scissor frames. A rigid bearing plate is mounted between the legs at each pivot point. Each plate has one or more tongues at its periphery which extend transversely to the plane of the plate and engage a leg of the scissor frame to prevent the plate from turning relative to that leg. The plate also has one or more other tongues at its periphery which extend in the opposite direction from the first tongue and which engage the other leg of the frame when the scissor frame is opened to its operative position to limit the further opening of the scissor frame. A cup-like housing engages over the plate and leg portions at the site of each pivot point to shield the occupant's fingers from pinch points at that location.

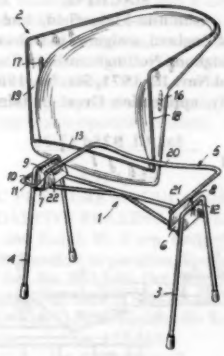
3,754,787
OPERATING SUPPORT FOR SURGEONS
William Wilson Garber, 6501 Hagueman Dr., Richmond, Va.
Filed Dec. 2, 1971, Ser. No. 203,980
Int. Cl. A47c *7/62*
U.S. Cl. 297—390 **6 Claims**

Operating room equipment is provided for supporting the body, feet and chest of a surgeon while operating. The support is adjustable to satisfy individual needs and preferences and does not interfere with the freedom of the surgeon's hand and



arm movements. The support is preferably releasably secured adjacent an operating table and may be provided with means for illuminating the operating field.

3,754,788
COMPOSABLE SEAT STRUCTURE
Alfredo Martini, Via della Giardina, Monza, Italy
Filed Nov. 27, 1970, Ser. No. 92,995
Claims priority, application Italy, Jan. 17, 1970, 19493 A/70
Int. Cl. A47c *7/00, 7/20, 1/12*
U.S. Cl. 297—445 **1 Claim**

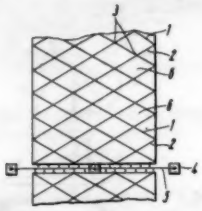


A modular composable seat structure suitable to be connected to other adjacent modular seats comprising a rigid carrying frame and a single piece seat member and a snapping means for removably connecting the said seat member to the said carrying frame.

3,754,789
PROCESS FOR RECOVERING HEAVY MINERAL BY SELECTIVE SEDIMENTATION FROM A BODY OF FLOWING WATER
Norbert Hering, Frankfurt, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt/Main, Germany
Continuation-in-part of Ser. No. 66,551, Aug. 24, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,246
Claims priority, application Germany, Aug. 26, 1969, P 19 43 301.3; Mar. 27, 1971, P 21 14 925.7
Int. Cl. E21c *45/00*
U.S. Cl. 299—8 **13 Claims**

A process of recovering heavy minerals from a body of natural flowing water in which said minerals are entrained, comprising

a. providing in said body of flowing water adjacent the bottom thereof a collecting structure which is capable of promoting a selective settling of said heavy minerals from said body of flowing water,
b. artificially agitating the bottom of said body of water upstream of said collecting structure, thereby producing a suspension of said heavy minerals and material of lower density,
c. permitting said suspension to flow downstream to said



collecting structure, whereby said heavy minerals selectively settle in said collecting structure and their proportion to total solids in said collecting structures is raised beyond their proportion in said suspension, and
d. periodically removing the settled and concentrated heavy minerals from said collecting structure. The collector comprises walls or bristles defining settling cells of limited depth into which heavier particles settle while lighter particles are carried along by the flowing water.

3,754,790

SELF-PROPELLED VEHICLE FOR A ROCK WORKING MACHINE

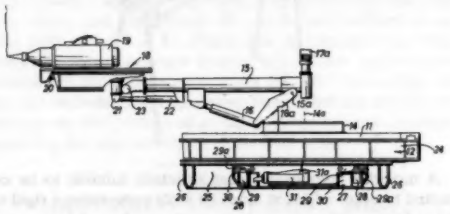
Henry Mappin, Ashton-in-Makerfield, and Joseph Gaskell, Wigan, both of England, assignors to Dobson Park Industries Limited, Nottingham, Nottinghamshire, England

Filed Nov. 12, 1971, Ser. No. 198,365

Claims priority, application Great Britain, Nov. 18, 1970, 54,722/70

Int. Cl. B25d *17/28*

U.S. Cl. 299—31 **9 Claims**



A vehicle carries an extensible boom rotatable about a horizontal and vertical axes. The end of the boom arm carries a universally articulated rock breaking tool mounting means. The vehicle has two ground engaging sole plates carrying hydraulic rams for raising the remainder of the vehicle from the floor to enable the vehicle to be advanced by a pair of advancing rams which are independently operable to enable the vehicle to be steered. The raising rams act on pivotal links which have rollers at their free ends to bear on an underneath surface of the chassis. The sole plates are in open-bottomed channel-like parts of H-section beams whose upper parts are sealed and act as sumps for hydraulic fluid and as radiators to dissipate heat. Control of the boom is from either side of the vehicle by means of a changeover valve. Control of advancing and reversing movement of the vehicle is from the front or rear of the vehicle.

3,754,791

APPARATUS FOR PRODUCING GROOVES IN SURFACES SUCH AS ROAD SURFACES

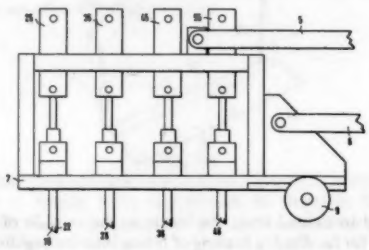
Hubert Hoermann, Kaufbeuren, Germany, assignor to Firma Unileit-Bayerische Bitamen-Chemie Ferdinand Heinrich, Kaufering, Germany

Filed Sept. 28, 1971, Ser. No. 184,439

Claims priority, application Germany, Oct. 9, 1970, P 20 49 588.9

Int. Cl. E01c *23/09*

U.S. Cl. 299—36 **2 Claims**



Grooves are formed in a pavement by means of planing chisels mounted on a tool holder carriage hitched to a tractor by means of a plurality of parallel bars to hold the carriage parallel to the surface to be grooved. The planing chisels are held stationary relative to the tool holder carriage and vertical or perpendicular relative to the surface to be grooved.

3,754,792

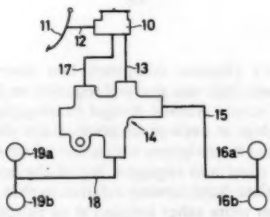
CONTROL VALVE ASSEMBLY

Noriakira Ishigami, Chiryu City, and Massasi Ban, Kariya City, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

Filed Mar. 3, 1972, Ser. No. 231,463

Int. Cl. B60t *13/00*

U.S. Cl. 303—6 C **5 Claims**



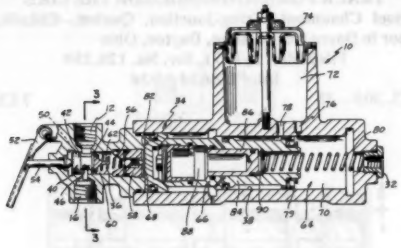
A fluid pressure control system for a vehicle comprising front and rear brake cylinders, dual master cylinder having two distinct fluid chambers and a fluid pressure control valve assembly including means for directly delivering fluid pressure supplied from one of the fluid chambers of the dual master cylinder to the front brake cylinders, controlling means for delivering fluid pressure supplied from the other fluid chamber of the dual master cylinder to the rear brake cylinders at a lower rate than fluid pressure generated at the other fluid chamber of the dual master cylinder and means for directly delivering fluid pressure supplied from the other fluid chamber of the dual master cylinder to the rear brake cylinders in the event of hydraulic failure of the front brakes.

3,754,793

SPRING BRAKE CONTROL VALVE

Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 3, 1971, Ser. No. 204,569
Int. Cl. B60t *13/22*
U.S. Cl. 303—13 18 Claims



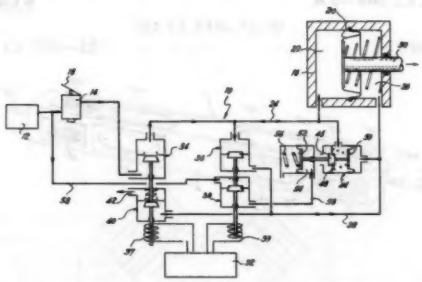
A spring brake control valve is disclosed which is used in a vehicular hydraulic system for developing pressure to release the vehicle's spring-applied emergency and parking brake. The valve includes a housing having an inlet and outlet connected to the vehicle's hydraulic system and a chamber communicated to the spring brake release mechanism. Valve means within the housing normally permits uninhibited flow of fluid between the inlet and outlet, but is movable to a position restricting fluid flow between the inlet and outlet to develop back pressure in the hydraulic system to develop pressure in the chamber communicated to the spring brake release mechanism with a fluid at a predetermined pressure level. The valve means is movable to yet another position to release the fluid pressure communicated to the release mechanism when the vehicle is parked.

3,754,794

PNEUMATIC ANTISKID BRAKING SYSTEM

Philippe Durand, Saint-Denis, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Dec. 8, 1971, Ser. No. 205,851
Claims priority, application France, Dec. 11, 1970, 7044703
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F 3 Claims



The invention relates to a pneumatic antiskid braking system for vehicles equipped with pneumatic power assistance.

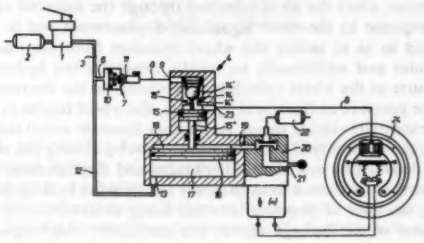
An exhaust valve designed to connect the motor chamber of a brake motor to the atmosphere is controlled on the one hand by a piston submitted to motor pressure differential between the two opposite chambers of the brake motor, and on the other hand by a control submitted to the opposed efforts provided by a preloaded spring and by a pilot pressure controlled by a valve operatively actuated by the antiskid control unit.

3,754,795

VEHICLE BRAKING SYSTEM

Alexander Von Lowis, Mauren, and Josef Trui, Bissingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 5, 1971, Ser. No. 169,335
Claims priority, application Germany, Aug. 13, 1970, P 20 40 206.6
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F 4 Claims



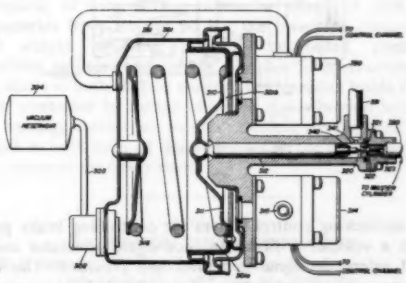
Rotatable road wheels of a vehicle are associated with fluid-operated brakes and with pressure-exerting brake-operating means for operating the brakes. An anti-blocking system is provided between the brakes and the brake-operating means and has a sensor which senses the revolutions of the road wheels, an electromagnetic valve controlled by the sensor and able to switch on and off a source of compressed air, a control valve which controls the flow of brake fluid to the brakes and which is movable between an open and a closed position, and a reducing piston which switches the control valve between its positions and which is movable in a sense switching the control valve to closed position under the influence of pressure fluid from the compressed air source, and in a sense switching the control valve to open position under the influence of pressure exerted by the brake-operating means.

3,754,796

HYDRAULIC PRESSURE MODULATOR FOR USE IN ADAPTIVE BRAKING SYSTEMS

Michael Slavin, and Ralph W. Carp, both of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 867,840, Oct. 20, 1969, Pat. No. 3,669,403, which is a division of Ser. No. 712,672, March 13, 1968, Pat. No. 3,494,671. This application Aug. 19, 1971, Ser. No. 173,268
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F 3 Claims



A vacuum actuated hydraulic pressure modulator for use in an adaptive braking system for automobiles, trucks and the like, which is interposed in the vehicle hydraulic brake line

between the master cylinder and the wheel cylinders to be controlled in response to error signals generated in an adaptive braking system control channel includes a diaphragm and a cooperating displacement rod within the modulator body which are positioned in accordance with the volumetric rate of air admitted to one side of the diaphragm by a solenoid valve which opens in response to an error signal generated by the adaptive braking system control channel when the vehicle wheels attain a certain dynamic condition. The displacement rod cooperates with a ball valve to normally allow free communication between the master cylinder and wheel cylinder; however, when the air is admitted through the solenoid valve in response to the error signal the displacement rod is displaced so as to isolate the wheel cylinders from the master cylinder and additionally to rapidly attenuate the hydraulic pressure at the wheel cylinders. In response to the decreasing brake pressure at the wheel cylinders, the wheel begins to accelerate to its vehicle speed. At another dynamic wheel condition, the error signal is extinguished thereby closing the solenoid valve. The modulated diaphragm and displacement rod are now repositioned so as to slowly increase the braking pressure, the rate of pressure increase being determined by the amount of air leakage across the modulator diaphragm. If wheel acceleration, in spite of the increasing brake pressure, increases to a third reference level, a modulator bypass valve is opened in response to a second control channel error signal so as to pneumatically shunt the aforementioned diaphragm causing the displacement rod and diaphragm to be repositioned more rapidly, thus increasing the brake pressure at a more rapid rate, which rate is determined by the size of the bypass valve.

3,754,797

SKID CONTROL SYSTEM

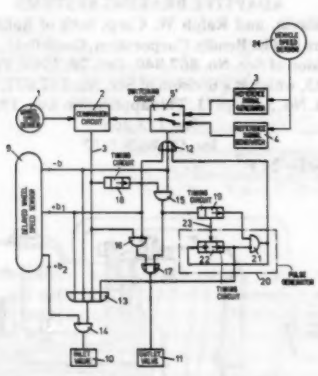
Anton Rodi, Karlsruhe; Heinz Leiber, Leimen; Wolf-Dieter Jonner, Heidelberg-Boxberg, and Wolfgang Korasiak, Ketsch, all of Germany, assignors to Teldix G.m.b.H., Heidelberg, Germany

Filed Nov. 12, 1971, Ser. No. 198,336

Claims priority, application Germany, Dec. 28, 1970, P 20 63 944.5

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **20 Claims**



An antilocking control system for controlling brake pressure in a vehicle. A first reference signal generator and a second reference signal generator are provided. The two reference signal generators each develops a separate reference signal which approximates in its time sequence the speed of the vehicle. The second reference signal is lower in value than the first reference signal. A wheel speed sensor is provided for supplying a signal which corresponds to wheel speed. The signal which corresponds to wheel speed is compared alternatingly with the two reference signals in a comparison circuit which develops, as its output, a control signal. A valve arrangement responsive to the control signal controls fluid pressure.

3,754,798

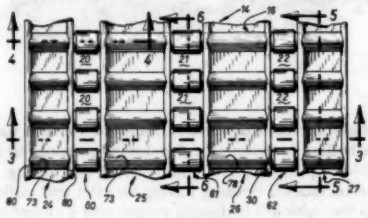
TRACK FOR SNOWMOBILE OR THE LIKE

Guy-Noel Chaumont, Tring-Jonction, Quebec, Canada, assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 2, 1971, Ser. No. 120,159

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **7 Claims**



The disclosure herein describes an endless flexible track for a snowmobile or the like which comprises at least two laterally spaced and longitudinally extending strips of elastomeric material, a plurality of equidistantly spaced reinforcing members incorporated in the strips and extending transversely thereof, and roller means rotatably mounted on the reinforcing members and defining between the strips at least one row of sprocket-teeth-receiving openings. This type of construction considerably diminishes wear due to friction between the sprocket teeth and the flexible track looped around the driving and idler sprockets.

3,754,799

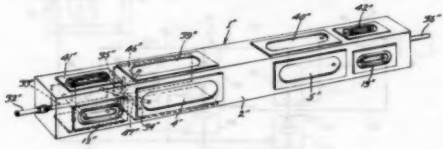
MOVABLE MACHINE ELEMENT SUPPORTED WITH THE AID OF A GAS OR FLUID BEARING

Olof Johan Gerhard Hedberg, Lidkoping, Sweden, assignor to Lidkopings Mekaniska Verkstads AB, Lidkoping, Sweden

Filed Nov. 18, 1971, Ser. No. 200,012

Int. Cl. F16c *17/00*

U.S. Cl. 308—5 R **6 Claims**



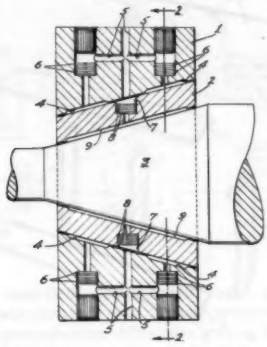
Movable machine element such as a rotating shaft or a reciprocating rod with an arbitrary cross section which partly or entirely is supported with the aid of a gas or fluid bearing or a combination of both in such a way that the medium, gas or fluid, before it forms a bearing or a slide cushion passes a throttle, characterized in that each throttle is formed by a part of a surface of the element, which surface is supported at the surface facing it by means of a gas or fluid cushion, and by a part of the last-mentioned surface, which last-mentioned part faces the first-mentioned part.

3,754,800

HYDROSTATIC BEARING

Erik Lennart Waldemar Johansson, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company, N.V., Amsterdam, Netherlands

Filed Jan. 17, 1972, Ser. No. 218,420
Claims priority, application Sweden, Jan. 25, 1971, 790/71
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 3 Claims



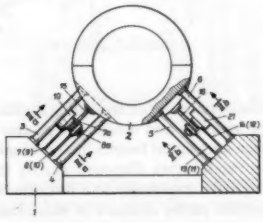
A hydrostatic bearing with two bearing surfaces which are movable relative to each other, characterized by a movable element, situated between these surfaces, which element is provided with two surfaces which together with the said bearing surfaces constitute two bearing gaps, one on each side of the intermediate element, and that the intermediate element, because of the friction occuring in the respective gaps when the first mentioned bearing surfaces are moving relative to each other, is moving at a speed which makes the frictional losses in the two gaps equal.

3,754,801

SUBSTANTIALLY RIGID BEARING MOUNTING FOR ROTARY BODIES

Alfred J. Giers, Rossdorf; Friedhelm Widmann, Gross-Zimmern, and Manfred Heiland, Hahn/Pfungstadt, all of Germany, assignors to Firma Carl Schenck Maschinenfabrik GmbH, Darmstadt, Postfach, Germany

Filed Nov. 15, 1971, Ser. No. 198,691
Claims priority, application Germany, Aug. 19, 1971, P 21 41 502.1
Int. Cl. F16c *35/00*
U.S. Cl. 308—15 4 Claims



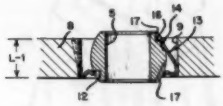
A substantially rigid bearing mounting for rotary bodies, especially for balancing machines comprises, in addition to the main supporting rods, sets of auxiliary supporting means which are controllable, for example, by a piston cylinder arrangement to vary their frictional force transmitting ability, whereby the resonant frequency of the entire structure may be varied or controlled.

3,754,802

SELF-ALIGNING BEARING ASSEMBLY

Joseph R. Keller, Fairfield, Conn., assignor to MPB Corporation, Keene, N.H.

Filed Jan. 25, 1972, Ser. No. 220,572
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 25 Claims



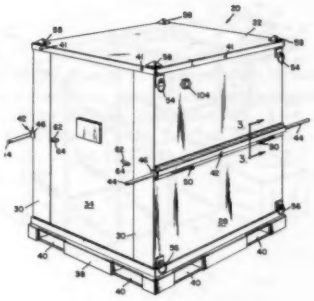
A self-aligning bearing assembly having a single piece, stamped housing of general cup-shaped configuration, an opening in the bottom of the housing for seating a spherical bearing ball and spring fingers extending from the bottom of the housing for engaging the diametrically opposite side of the ball and retaining it in the housing.

3,754,803

EQUIPMENT TRANSPORTER AND STORAGE MODULE

Paul Underwood, Garden Grove, and Douglas A. Miller, Playa del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 30, 1971, Ser. No. 185,215
Int. Cl. A24f *25/00*
U.S. Cl. 312—31 24 Claims



Capable of withstanding minimum forces of 300G and frequencies from zero to 50 Hz, the invention comprises a light weight, reusable, humidity controlled, controlled breathing, shipping and storage container with removable access doors at both ends. A carriage is suspended inside the exterior container by means of shock and vibration isolators. The carriage carries two or more shelves, the top shelf being hinged at both ends of the container at the doors to permit easy access to the lower shelf.

3,754,804

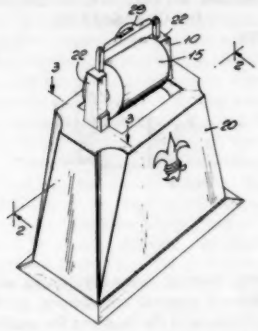
BATHROOM TISSUE DISPENSER

Hal E. Cushman, 709 East 1st, Cle Elum, Wash.

Filed July 26, 1972, Ser. No. 275,176
Int. Cl. B65d *83/00*
U.S. Cl. 312—71 4 Claims

A disposable pre-packed rack containing several rolls of toilet tissue which fit into a mating floor mounted dispenser. Springs and latches in the dispenser engage the rack to expose

one roll at a time of tissue mounted on a rotatable spindle fastened to the rack. Upon complete use of the exposed roll,



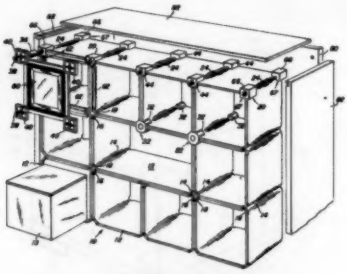
the dispenser is unlatched to expose a second roll of tissue, and the portion of the rack containing the initial spindle is broken off, or otherwise detached.

3,754,805

URN STORAGE ASSEMBLY

Thomas W. Pangburn, Sewickly, and Kenneth Pavlitsa, Pittsburgh, both of Pa., assignors to Jas. H. Matthews & Co., Pittsburgh, Pa.

Filed Nov. 15, 1971, Ser. No. 198,645
Int. Cl. F16b *12/00*
U.S. Cl. 312—111 **8 Claims**



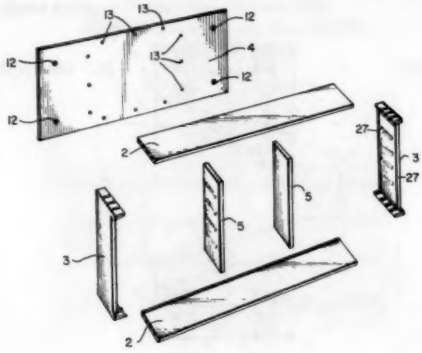
An urn storage assembly for the interment of cremated remains is disclosed. The assembly includes a plurality of tubular storage members of generally rectangular cross-section, shaped to receive cremated remain storage urns. The storage members are nested in abutting side-by-side and top-to-bottom relationship to one another. Each storage member has generally rounded axial corners whereby axially extending passageways are defined among the corners of abutting storage members. Securing means in the form of clips are provided for holding the storage members in fixed relationship with each other. The clips are sized and shaped to snugly grasp the corner portions of the ends of the adjacent nested support members. One form of clip is shaped to fit within the four corners of four adjacent support members while another form is shaped to fit within two corners of two side-by-side or top-to-bottom abutting support members. Each pair of oppositely arranged clips are held together by a rod engaging the clips and extending through the passageway defined among the axial corners of adjacent storage members. Cover plates removably secured to the clips and decorative edge strips for covering the exposed outer edges of the support members are also provided.

3,754,806

FRAME STRUCTURE FOR BATHROOM CABINETS

Yasuharu Nakagawa, Suita, Japan, assignor to Toyo Plastic Co. Ltd., Osaka, Japan

Filed July 29, 1971, Ser. No. 167,345
Claims priority, application Japan, Aug. 5, 1970, 45/78385
Int. Cl. A47b *43/00, 87/00;* **A47f** *5/08*
U.S. Cl. 312—257 **3 Claims**



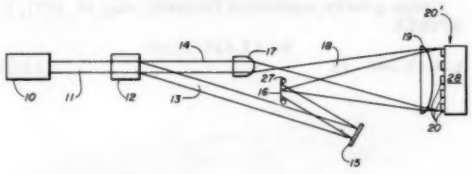
A frame structured plastic bathroom cabinet, including at least two side profiles or components having arms extending at right angles at the lower and upper ends and two hollow upper and lower profiles or components with open ends to receive the arms of the side profiles so as to form a framed enclosure, said enclosure being capable of vertical and horizontal division into compartments.

3,754,807

PHASE MODULATION HOLOGRAPHIC DATA RECORDING APPARATUS

Donald H. McMahon, Carlisle, and James Bruce Thaxter, Townsend, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 204,808
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **7 Claims**

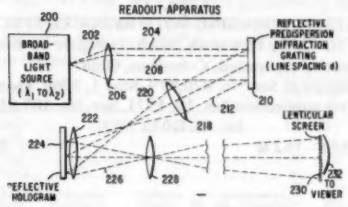


A holographic apparatus for recording digital data comprising a recording medium and means for producing coherently related reference and signal beams in combination with a plurality of phase modulators disposed across the path of the signal beam and each responsive to a discrete bit of the digital data to be recorded. In the absence of electrical excitation applied to the modulators, the entire signal beam would normally interfere with the reference beam to produce high intensity interference fringes. Application of electrical energy representative of discrete digital bits, however, to one or more of the modulators causes the associated portions of the signal beam to be varied in phase such that interference thereof with the reference beam is substantially weakened whereby upon illumination of the developed hologram for readout only the unmodulated parts of the signal beam are reproduced.

3,754,808
HOLOGRAPHIC READOUT SYSTEM EMPLOYING PREDISPERSION DIFFRACTION GRATING

Burton Ross Clay, Wayland, and Douglas Alan Gore, Billerica, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1971, Ser. No. 176,178
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 6 Claims

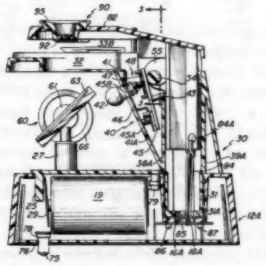


A hologram recorded with coherent wave energy of a predetermined wavelength is read out with broad-band energy by employing a predispersion diffraction grating for angularly dispersing broad-band wave energy incident thereon to provide each angular component of the output beam derived therefrom with a different angular orientation with respect to the hologram. By appropriately selecting the line spacing of the diffraction grating with respect to the period of the spatial carrier of the hologram, a hologram read out with the output beam of the grating may have the respective reconstructed images corresponding to each component wavelength positioned in substantial coincidence with each other.

3,754,809
MICROSCOPE

Burton H. Harrison, Weston, Mass., assignor to Selective Educational Equipment, Inc., Newton, Mass.

Filed Feb. 3, 1972, Ser. No. 223,120
Int. Cl. G02b 21/06
U.S. Cl. 350—87 6 Claims



A microscope including a base and a support arm extending upwardly from the base and projecting over a portion of the base. A lens carrier is positioned on and movable with reference to the support arm, and includes lens receiving means. A cam means is provided to raise and lower the lens carrier.

The microscope also includes a mirror, a bulb positioned adjacent to the mirror, a battery, and a pushbutton switch. The pushbutton switch is arranged to protrude in part below the bottom surface of the base and is closed to illuminate the bulb when the edge of the microscope base is depressed to a position flush with the supporting surface.

3,754,810
CONVERTIBLE SUNSHADE AND NON-GLARE VISOR

Frank J. Starczewski, 1225 W. 31st Pl., Chicago, Ill., and Robert E. Spychalski, 6214 S. Kilpatric Ave., Chicago, Ill.

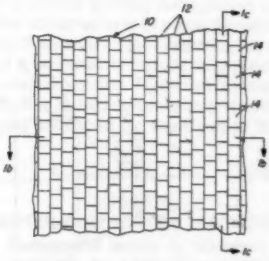
Filed Feb. 15, 1972, Ser. No. 226,485
Int. Cl. B60j 11/00; G02b 5/30
U.S. Cl. 350—156 6 Claims

A transparent non-glare visor body having a removable, flexible opaque cover, which is is mounted to entirely enclose the visor body when said visor body is not used to protect viewing against glare of sunlight. The non-glare visor body is plastic with safety trim edging along the free edges of the visor body. The flexible cover has safety material to provide cushioning.

3,754,811
PROJECTION SCREEN

Harvey O. Hoadley; Robert N. Wolfe; Harold F. Langworthy, and James J. Depalma, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,084
Int. Cl. G03b 21/60
U.S. Cl. 350—127 19 Claims



A highly efficient projection screen of improved aesthetic quality. The screen comprises a plurality of contiguous grooves, each groove having a depth which undulates at a random spatial frequency within a predefined spatial frequency range to define a row of contiguous microelements of random sizes, preferably alternating from concave to convex in shape. Each microelement is contoured to redistribute substantially all of the incident image flux through a predefined audience space in such manner that its luminance, viewed from any point in the audience space, is substantially constant.

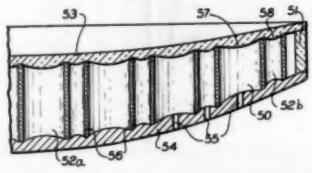
3,754,812
LIGHTWEIGHT OPTICAL ELEMENTS WITH HONEYCOMB SUPPORT PLATE

Heinrich Mohn, Hailer, Kreis Gelnhausen, Germany, assignor to Heraeus-Schott Quarzschmetze GmbH, Hanau, Germany

Continuation-in-part of Ser. No. 491,525, Sept. 30, 1965, abandoned, Continuation-in-part of Ser. No. 630,147, Sept. 23, 1966, abandoned, Continuation of Ser. No. 825,087, March 20, 1969, abandoned. This application Mar. 4, 1971, Ser. No. 153,799

Int. Cl. G02b 5/08

U.S. Cl. 350—167 6 Claims



A light weight optical assembly comprising an optical surface, such as a mirror or an optically transparent surface, which surface is in the form of a plate and is supported by and fused to a fused silica perforated support structure, which support structure comprises walls extending longitudinally transverse to the major surfaces of the optical plate wherein the optical plate is fused to the walls at the interface of the ends of the walls and the rear surface of the optical plate, especially a device having a supporting structure whose perforations are of a diameter between 40 and 80 mm, which perforations are substantially uniformly distributed throughout its area, all extending generally axially parallel to each other, especially a support structure comprising large and small perforations with said small perforations having a smaller diameter, at least at the outer edge of the supporting structure.

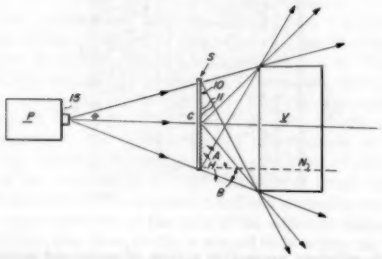
3,754,813
RADIATION-REDISTRIBUTIVE DEVICES

James J. Depalma, and Harold F. Langworthy, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,082

Int. Cl. G03b 21/60

U.S. Cl. 350—127 18 Claims



Devices for redistributing incident radiation in a prescribed manner. Such devices comprise a multitude of contiguous optical microelements, each of such microelements being contoured and oriented to redistribute incident radiation, emanating from an intended irradiating source, only throughout an angular field just large enough to encompass a predefined region wherein the redistributed radiation has particular utility. Moreover, the contour and orientation of each microelement is such as to produce substantially uniform radiance throughout such predefined region of utility, and to redirect extraneous or undesirable radiation incident thereon away from said predefined region. The radiation-redistributive devices of the invention are particularly useful as front or rear projection screens, lighting reflectors or refractors, illumination aids for photographic prints, traffic signs, advertisements, etc, etc.

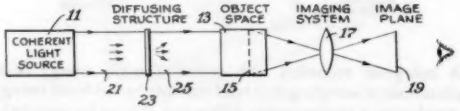
3,754,814
COHERENT IMAGING WITH REDUCED SPECKLE

Emmett N. Leith, Plymouth, Mich., assignor to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 820,879, May 1, 1969, abandoned. This application Jan. 19, 1971, Ser. No. 107,853

Int. Cl. G02b 5/02

U.S. Cl. 350—162 R 20 Claims



An improved technique for imaging a multiplicity of planes of non-diffuse objects, including non-diffuse transparencies, with coherent illumination which utilizes a diffusion structure having a periodic phase thereacross.

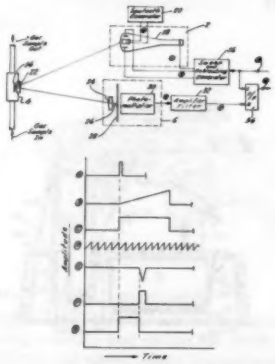
3,754,815
ROTATABLE MIRROR ANGULAR POSITION ELECTRONIC MEASURING SYSTEM FOR ACTIVATING A DIGITAL DISPLAY

Clifford Sanctuary, Palos Verdes Estates, and Donald C. Woods, Big Bear City, both of Calif., assignors to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed Mar. 17, 1972, Ser. No. 235,540

Int. Cl. G02f 1/34; G01c 1/00

U.S. Cl. 350—285 5 Claims



An electronic measuring system is provided which measures the angular position of a rotatable mirror so as to provide an electrical output signal suitable for activating a digital display or for introduction into a computer for further processing. The mirror, for example, may be incorporated into a galvanometer, gas analyzer, or other measuring instrument. In the practice of the invention, a moving light spot is directed to the mirror for reflection thereby to a photo-detector assembly. The reflected light spot reaches the photo-detector after a time interval which is dependent upon the angular position of the mirror, so that an electrical output signal representative of the angular position of the mirror may be obtained.

3,754,816

STEEP-EDGE ABSORPTION FILTER

Willi Ritze, Mainz, Mombach, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Nov. 15, 1967, Ser. No. 683,228

Claims priority, application Germany, Nov. 25, 1966, J 32335

Int. Cl. G02b 5/22; C03c 3/22

U.S. Cl. 350—311 1 Claim

There is disclosed glass compositions, i.e., filters characterized by steep edged absorption curves in the wave length range $\lambda = 380 - 475$ nm. The filters are prepared by heat treating glass samples having the following composition at a temperature between 550° and 620° C at which CdS + ZnS color centers are formed:

	wt-percent
SiO_2	44 –66
K_2O	8 –24
ZnO	12 –24
B_2O_3	0 – 8
Na_2O	0 – 4
Al_2O_3	0 – 3
MgO	0 – 6
CaO	0 –12
BaO	0 – 8
SrO	0 –12
ZnS	0.5– 2.4
CdS	0.5– 1.5

3,754,817

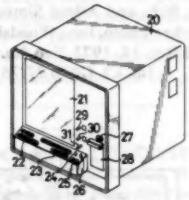
APPARATUS FOR RETRIEVING FILM SHEETS

Takeo Iida, Setagayaku, Tokyo; Shiro Toriumi, Nerimaku, Tokyo; Masahiro Yamamoto, Shinagawaku, Tokyo, and Hiroshi Endo, Fuchu, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Nov. 3, 1971, Ser. No. 195,159

Int. Cl. G03b 23/08, 21/00

U.S. Cl. 353—27 12 Claims



A retrieval apparatus comprises a lifter carrying an unloadable cassette in the form of a rectangular box containing a great number of film sheets, a retrieving mechanism for selecting and taking out a film sheet from the cassette in operative relation to the upward movement of the lifter, a positioning mechanism for receiving the selected film sheet from the retrieving mechanism by way of a delivery mechanism and setting the desired frame of the film sheet at the projecting position in accordance with a signal instruction, and a returning mechanism for returning the film sheet into the cassette after completion of projection. After the cassette is placed on the lifter, the opening of the lid of the cassette, selection and positioning of the film sheet, projection, and returning the film sheet into the cassette are all conducted automatically.

3,754,818

PROJECTOR FOR PHOTOGRAPHIC TRANSPARENCIES

Rolf Gehlert, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

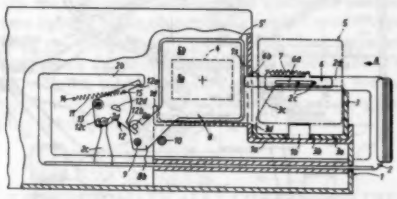
Filed Feb. 12, 1971, Ser. No. 114,906

Claims priority, application Germany, Feb. 17, 1970, G 70 05 576.4

Int. Cl. G03b 23/04

U.S. Cl. 353—92 9 Claims

A projector for color slides wherein a shutter moves in front of the slide which is held in projection position before the slide begins its return movement into the magazine and wherein the shutter moves out of registry with a slide in projection position after the slide comes to a full stop. The shutter is movable by a lever which is pivotable by the slide changer, by a rotary electromagnet or motor which is energizable by the slide changer, or by a disk which is rotated by a motor and has a cam



cooperating with a follower on a linkage which is connected with the shutter. The disk also carries an eccentric wiper which cooperates with a cam on the slide changer to move the slide changer while the shutter is at a standstill in front of a slide in projection position.

3,754,819

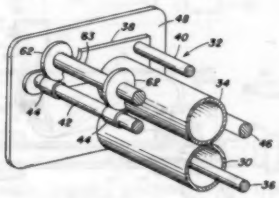
APPARATUS FOR PLACING ROLLERS IN CONTACT IN A PRESSURE FUSER ASSEMBLY

Oskar Braun, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,304

Int. Cl. H05b 3/10; G03g 15/20

U.S. Cl. 355—3 7 Claims



A cam assembly is mounted on an electrostatographic machine in contact with a structure bar of a pressure roller assembly. Upon activation of a motor, the cam shaft is caused to rotate through a suitable gearing arrangement thereby swinging the assembly about an axis to place the pressure roller in contact with the fuser roller. Upon reaching the end stop position, a solenoid is activated to lock by appropriate linkage the rollers in operational position. Upon deactivation of the solenoid the cam shaft is caused to rotate to its standby position by a torsional spring affixed to the shaft and to the support assembly.

3,754,820

COPIER-DUPLICATOR MACHINE

Loren Sheffo, Platine, and Henry A. Mathisen, Northbrook, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Division of Ser. No. 735,402, June 7, 1968, Pat. No. 3,612,682. This application Apr. 16, 1971, Ser. No. 134,846

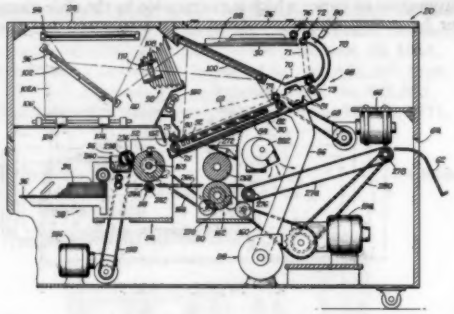
Apr. 16, 1971, Ser. No. 134,846

Int. Cl. G03g 15/00

U.S. Cl. 355—3 10 Claims

A copier-duplicator includes a master preparing section for uniformly charging and then exposing a photoelectrostatic master to provide a latent image on the master. An adjustable optical system permits the size of the image to be changed to provide copies of different sizes, and a controlled illumination source removes the charge from the unused area of the master

to avoid spurious powder transfer to the copies. The prepared master is clamped on a rotating cylinder, and the image is



developed by powder and transferred to copy sheets by a pressure roller as many times as required to produce the desired number of copies.

3,754,821

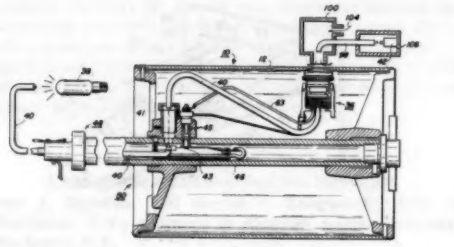
AUTOMATIC DEVELOPMENT CONTROL

Charles A. Whited, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1971, Ser. No. 213,056

Int. Cl. G03g *15/00*

U.S. Cl. 355—4 **24 Claims**



An apparatus for regulating the developability of a multicolor developing system utilized in a reproducing machine. The regulating apparatus controls image density and maintains color balance. Environmentally induced developabillity changes and toner colorant usage rate variations are adjusted by controlling the concentration of selected toner colorants in the corresponding developer material.

The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as the scope of the invention in any way.

3,754,822

SCANNING SYSTEM

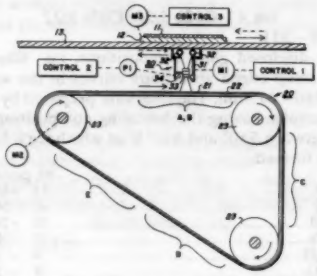
Lawrence E. Melrose, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 880,577, Nov. 26, 1969, abandoned. This application Feb. 26, 1971, Ser. No. 119,406

Int. Cl. G03g *15/04*

U.S. Cl. 355—8 **9 Claims**

An optical scanning system for minimizing the time required for exposing information on a document to a continuously moving photosensitive member, having a moving transparent platen which supports the document in a plane parallel to the photosensitive member and transports the document in the same direction and at the same speed as that of the photosensitive member, and a scanning device including a lamp and lens movably disposed between the document and photosensitive member which, during exposure of the photosensitive member, moves in the direction opposite the direction of the document and photosensitive member. The



system, in one embodiment, includes a photosensitive member in the form of an endless belt which is exposed in a flat plane and a charging device attached to the scanning device which is adapted to deposit an electrostatic charge on the belt immediately prior to the belt being exposed to the light pattern.

3,754,823

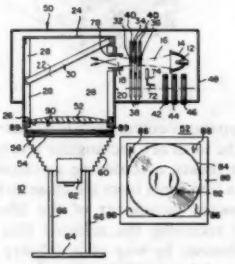
LIGHT SOURCE FOR COLOR ENLARGERS

Louis L. Weisglass, New York, N.Y.; Robert A. Flieder, Englewood Cliffs, N.J., and Alfred Simmon, New York, N.Y., assignors to Berkey Photo, Inc., Woodside, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,808

Int. Cl. G03b *27/76*

U.S. Cl. 355—35 **20 Claims**



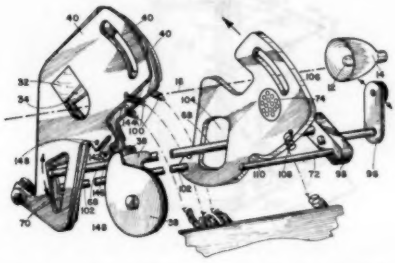
In the photographic enlarging apparatus disclosed, three filters partially intercept a white light beam emerging from a light source having a reflector. The filters divide the beam into a white portion and an intensely colored portion. A mixing chamber mixes the white and intensely colored light. A diffuser at the bottom of the chamber illuminates a color film, either negative or positive slide. Optical means focus the light at the film onto printing paper. A light attenuator composed of a perforated metal plate is interposed between the source and the filters to dim the total light output of the enlarger. Mechanical means allow the attenuator to be shifted into and out of the beam. The face of the attenuator directed away from the source and toward the filters is provided with a reflecting surface. This reflecting surface prevents an undesirable color shift when the attenuator is moved into or out of the beam.

3,754,824

LIGHT COLOR CONTROL APPARATUS

Louis L. Weisglass, New York, N.Y.; Robert A. Flieder, Englewood Cliffs, N.J., and Lewis Rubin, Great Neck, N.Y., assignors to Berkey Photo, Inc., Woodside, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,809
Int. Cl. G03b 27/76
U.S. Cl. 355—35 27 Claims



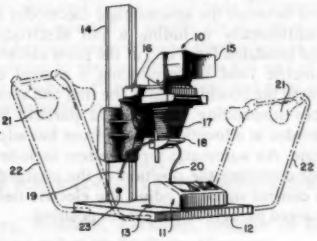
The disclosed apparatus forms part of the lamp house in a photographic enlarger. Three dichroic filters partially intercept a white light beam emerging from a light source having an elliptical reflector. The filters divide the beam into a white portion and an intensely colored portion. The beam enters a mixing chamber wherein white-opaque side walls and a ceiling coact with each other to mix the white and intensely colored light. The light exits through a diffuser at the bottom of the chamber and passes through a color slide or negative having a color image. An optical system focuses the image on printing paper. Three pivotally mounted filter holders support the filters in their respective positions. Three cams movable by manually adjustable wheels control the positions of the holders. A control arm engageable with all three of the holders simultaneously draws the filter holders out of engagement with the cams until the filters are removed from the beam. A regulating arm moves an attenuator into the path of the beam.

3,754,825

PHOTOGRAPHIC COPY SYSTEM

Dundan C. Sorli, Chelmsford, and Charles M. Ventre, Saugus, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1971, Ser. No. 137,486
Int. Cl. G03b 27/54
U.S. Cl. 355—70 32 Claims



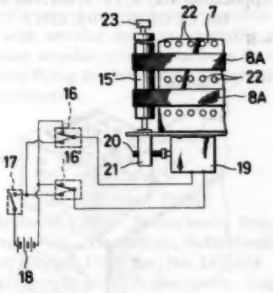
A photographic copy system including a portable light source accessory unit having a plurality of light producing elements. The unit includes a translucent window configured to support an object such as a film transparency in the illumination path in an area in registration with the camera and in an area out of the registration therewith for editing or other ancillary purposes. A flash bulb mounted within the lighting unit directly beneath the translucent window provides illumination of the object for photographic copying purposes and a pair of projector type lamps disposed along side the flash bulb and separated from the translucent window by a dichroic element are utilized primarily for editing and composing purposes, and include separate control elements configured for continuous operation of one lamp and supplemental intermittent operation of the other for viewing of relatively dense transparencies. Additionally, the light source unit includes a reflector accessory for surface lighting of the object, and a control system capable of varying the flash intensity over a prescribed range and for indicating when the proper charge level is achieved. The system also includes supplemental lighting elements for surface illumination of an object when the latter is properly positioned on the lighting unit.

3,754,826

DEVICE FOR AUTOMATICALLY CORRECTING THE POSITION OF AN ORIGINAL IN AN AUTOMATIC COPYING MACHINE

Yugoro Kobayashi, Suginami-ku, Tokyo, and Tsutomu Yamagami, Arakawa-ku, Tokyo, both of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed Sept. 21, 1972, Ser. No. 290,875
Int. Cl. G03b 27/12
U.S. Cl. 355—109 6 Claims



In an automatic copying machine of the type having an original circulation repeat path for producing a number of duplicates, a device for automatically correcting the orientation of the original during circulation on the repeat path endless belt comprising the disposing of original sensing switches on opposite sides of the repeat path upstream of the duplicating station, which switches lie on a line normal to the direction of travel of the original so that when the original is correctly oriented on the belt, the switches are simultaneously actuated, but when the original is incorrectly oriented, one switch will be actuated before the other. The time lag between the actuation of the switches is used to actuate a correcting system which through a bearing nut mounted on a threaded portion of a DC motor output shaft moves one end of one of the belt mounting rollers whose other end is pivoted so as to change the length of one side of the belt with respect to the other side, thus reorienting the original before entry into the duplicating station.

3,754,827

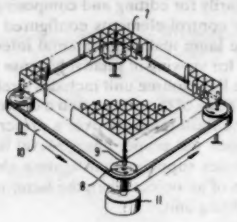
DUPLICATING EQUIPMENT WITH A MOVABLE GRID

Tomio Okada, Asaka-shi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 15, 1971, Ser. No. 198,538
Claims priority, application Japan, Nov. 16, 1970, 45/113730
Int. Cl. G03b 27/04
U.S. Cl. 355—113 4 Claims

In duplicating equipment having a light source radiating scattered light such as fluorescent lamp, a grid made of fine

partition plates is provided to decrease the scattered light. To prevent the shadow of the grid from appearing in the duplicated image, the grid is shifted during the time of exposure. As a



specific example, therefore, the grid can be supported by pin members, each of which is provided eccentrically on supporting disks rotated by a motor, so that the grid is circularly shifted.

3,754,828

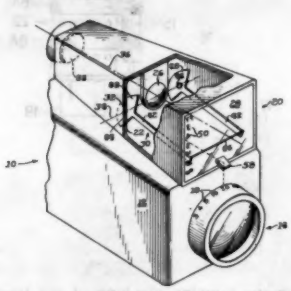
BALANCED NEEDLE FOCUSING SYSTEM

John Darvasi, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 50,503, June 29, 1970, abandoned. This application May 4, 1972, Ser. No. 250,403

Int. Cl. G03b *13/04, 13/18*

U.S. Cl. 356—8 **6 Claims**



A distance determining mechanism usable with an optical instrument having a focusable objective and a viewfinder in which the distance determining mechanism yields a visual indication of instrument to subject distance, which indication is usable for adjusting the focus condition of the focusable objective to that distance while continuing to view the subject. Preferably, the distance determining mechanism within the viewfinder, includes a balanced indicator member orientable responsive to gravity and arranged to form a movable subject base reference and further arranged so that the indicator member is visible in the viewfinder during determination of distance and is substantially aligned with a vertical limit of the field of view of the viewfinder when substantially horizontally oriented.

3,754,829

METHOD AND MEANS FOR QUANTITATIVE SPECTROGRAPHIC ANALYSIS

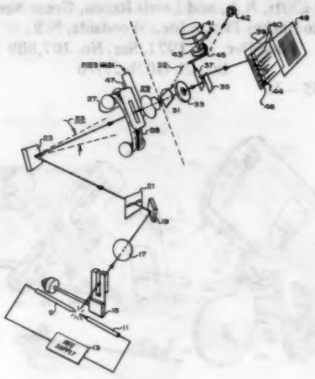
John M. Hoyte, Menlo Park, and Keith E. Hollenbeck, Mountain View, both of Calif., assignors to Spectrex Company, Redwood City, Calif.

Filed Aug. 19, 1971, Ser. No. 173,078

Int. Cl. G01j *3/06, 3/18*

U.S. Cl. 356—76 **10 Claims**

The spectral lines associated with a sample of material under examination are deflected from their normal optical path by an angle which varies logarithmically with time toward a sheet of photographic film. The film is thereby exposed to provide a photographic image of the spectral lines which taper



in intensity toward nonexposure, and the length of the line or lines is thus representative of the concentration of an element present in the sample under examination.

3,754,830

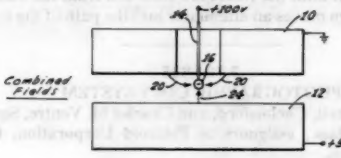
SCATTERING CELL EMPLOYING ELECTROSTATIC MEANS FOR SUPPORTING A PARTICLE

David T. Phillips; Herman H. Brooks, both of Goleta, Calif.; Philip J. Wyatt, and Chekie R. Liu, both of Santa Barbara, Calif., assignors to Science Spectrum, Inc., Santa Barbara, Calif.

Filed Oct. 21, 1971, Ser. No. 191,373

Int. Cl. G01n *21/00;* **H01g ; B01d** *59/44*

U.S. Cl. 356—103 **14 Claims**



A levitator for use with a light scattering photometer unit including a spaced pair of plate electrodes to provide an electric field for producing a first electrostatic force on a charged particle located between the spaced plate electrodes and with the levitator additionally including a pin electrode extending through and insulated from one of the plate electrodes to provide an electric field for producing a second electrostatic force and with the combination of the first and second electrostatic forces suspending the charged particle between the plate electrodes at a location spaced from but adjacent to the pin electrode. An automatic servo system includes an optical detector for detecting the position of the charged particle to produce a control signal to adjust the electric fields to maintain the charged particle in the proper position.

3,754,831

SCRAPING AND CLEANING DEVICE

Wayne R. Hutter, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

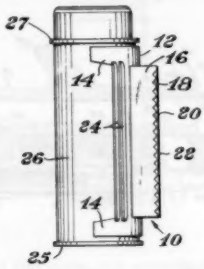
Filed May 27, 1971, Ser. No. 147,478

Int. Cl. A47l *1/16*

U.S. Cl. 401—139 **16 Claims**

A scraping and cleaning device which, when attached to a container of cleaning fluid, facilitates removal of dirt, soil, ice,

frost and like material from windows, mirrors, windshields, etc. The device has an elongated body element with a curved or arcuate shaped cross section adapted to fit snugly against the side wall of a container. The body element may include at least one pair of opposing integrally curved fingers, which body element and fingers combined preferably form an arc or



curve of greater than 180° for snap-on attachment of the same to the side wall of a container. Integral, transversely elongated scraping and cleaning blade sections diverge from the body element. One section of the blade sections is provided on its outer end with a smooth beveled edge or squeegee and amother blade section of the blade sections is provided on its outer end with a coarse serrated or toothed edge.

3,754,832

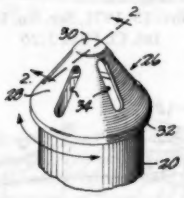
DEVICE FOR DEBURRING PLASTIC PIPES

Charles F. Stickler, 57455 Poppy Rd., South Bend, Ind.

Filed Dec. 1, 1970, Ser. No. 94,008

Int. Cl. B23d *79/08*

U.S. Cl. 408—227 **3 Claims**



A pipe deburring tool having a rigid body with tapered inner and outer surfaces adapted to engage the end of a pipe to be deburred and having means defining sharp edges at said inner and outer surfaces to remove burrs from the end of the pipe upon relative rotation of contacting tool and pipe while substantially concentrically positioned.

3,754,833

DEVICE FOR RADIALLY CENTERING TURBINE HOUSINGS

Axel Remberg, Mulheim, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany

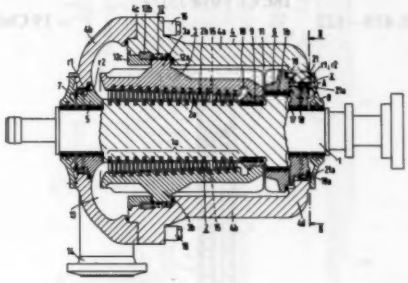
Filed Apr. 17, 1972, Ser. No. 244,416

Claims priority, application Germany, Nov. 5, 1970, P 20 54 465.4

Int. Cl. F01d *25/26*

U.S. Cl. 415—108 **8 Claims**

In order to attain an axially fixed mounting of the inner shell of a turbomachine housing in the vicinity of the bearing and centering locations of a respective, axially-normal plane, a pocket space of a groove widening provided in an axial groove formed in the outer shell of the housing is located, as viewed from the outside, axially behind a respective retaining claw received in the axial groove and is formed by a reduction of the narrower axial groove with respect to the groove widening. Another fitting member in form of a cross bar is insertable into the pocket space, rearwardly engages the retaining claw and abuts axially against housing shoulders located in vicinity of a



bottom surface of the pocket space, thereby fixing the inner shell against displacement in one axial direction. The inner shell is formed with annular surfaces abuttable against corresponding annular shoulder-countersurfaces formed on the outer shell, thereby fixing the inner shell against displacement in the other axial direction.

3,754,834

CENTRIFUGAL PUMP

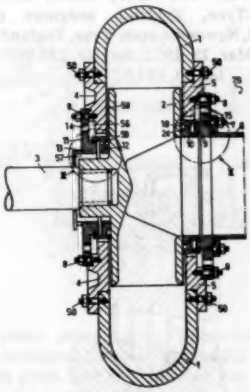
Tjako Aaldrik Wolters, Vianen, Netherlands, assignor to Ballast-Nedam Groep N.V., Amsterdam, Netherlands

Filed July 30, 1971, Ser. No. 167,674

Claims priority, application Netherlands, Aug. 4, 1970, 7011545

Int. Cl. F04d *29/08, 7/00*

U.S. Cl. 415—110 **20 Claims**

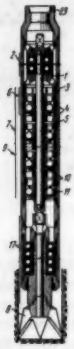


A centrifugal pump with at least one sealing ring, having two faces divided from each other by a space, of which faces a first face is positioned at the high-pressure zone and a second face at the low-pressure zone. By communicating the space with the low-pressure zone the high-pressure is decreased along the first face upto the low-pressure. The required actuating force for contacting the sealing ring with the co-acting face is therefore small, so that the specific face surface pressure and therewith the wear of the face are small.

3,754,835
TURBODRILL

Evgeny Illarionovich Ivanov, 2 Setunsky proezd, 4 kv. 150, Moscow; Viktor Semenovich Olkhov, oblast, Kungur ulitsa K. Marxa 30, kv. 8; Evgeny Dmitrievich Kostyrya, oblast, Kungar Truda, 43, kv. 75, both of Permskaya, and Nikolai Dmitrievich Derkach, ulitsa Stakhanova, 40, kv. 66, Perm, all of U.S.S.R.

Filed Aug. 25, 1971, Ser. No. 174,861
Int. Cl. F01d *15/12*
U.S. Cl. 415—122 **19 Claims**

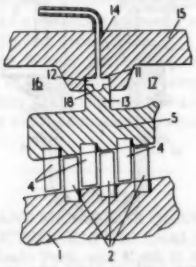


A turbodrill for drilling wells, provided with a mechanism for reducing the rotation speed of the bit made in the form of a friction speed reducer wherein the rotors function as the inner wheel while the turbodrill stators function as the outer wheel. The speed reducer carrier accommodates rolling elements between the stators and rotors, said elements rolling during rotor rotation under the effect of the contact forces of friction.

3,754,836
STEAM TURBINES

John Reginald Bolter, and Harry Ashley Kirby, both of Newcastle-upon-Tyne, England, assignors to Reyrolle Parsons Limited, Newcastle-upon-Tyne, England

Filed Mar. 28, 1972, Ser. No. 238,907
Int. Cl. F01d *25/26*
U.S. Cl. 415—136 **6 Claims**

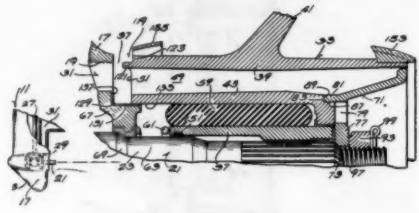


In an axial flow steam turbine, erosion of stator blade supporting structure is minimised in wet steam regions by injecting high pressure dry steam into the turbine by way of the said structure in such a way that the vulnerable areas of the structure are protected from the wet motive steam by the injected dry steam.

3,754,837
VARIABLY VENTILATED PROPELLER

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 5, 1972, Ser. No. 259,963
Int. Cl. B63h *1/20*
U.S. Cl. 416—93 **8 Claims**

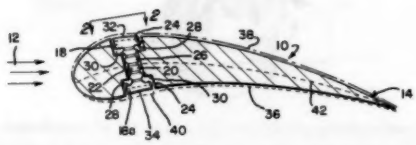


Disclosed herein is a marine propulsion device comprising a propeller shaft supported by a lower unit and extending rearwardly through an exhaust gas opening in the lower unit, a propeller having a hub adapted for discharging exhaust gas there through and mounted on the rearwardly extending propeller shaft for common rotary movement with the propeller shaft and for axial movement relative to the propeller shaft between a first, forwardly located position and a second position located rearwardly of the forward position with the propeller spaced axially rearwardly of the lower unit exhaust gas opening, together with means biasing the propeller toward the rearward position.

3,754,838
VIBRATION-SUPPRESSED BLADE

Chuen-Cheng Fu, North Brunswick, and Mukund D. Gangal, Princeton, both of N.J., assignors to Ingersol-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 15, 1971, Ser. No. 198,756
Int. Cl. F01d *5/26*
U.S. Cl. 416—145 **1 Claim**



A blade operative in a fluid environment and, therefore subject to vibration, has inertially-responsive weights movably mounted therein to impact on blade surfaces during vibration to dissipate the vibration energy.

In a first embodiment, the invention comprises a pair of inertially-responsive weights mounted to either ends of a shaft for relatively slidable movement within a cross-section of the blade. In an alternate embodiment of the invention, a pair of inertially-responsive weights are coupled to opposite ends of a resilient shaft which is disposed through the cross-section of the blade, and the weights swing about an arc to impact on blade surfaces to dissipate the vibration energy.

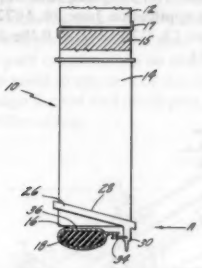
3,754,839
FILAMENT REINFORCED ROTOR ASSEMBLY

Robert R. Bodman, Riviera Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 1, 1972, Ser. No. 249,336
Int. Cl. F04d *29/26*; **F01d** *5/24*
U.S. Cl. 416—195 **8 Claims**

This invention relates to a rotor assembly reinforced with a filament wound composite ring. The rotor assembly comprises

a rotor including a plurality of radially extending circumferentially spaced blades. The composite ring surrounds the blade tips and is closely spaced therefrom by radially flexible support means. During rotor operation the blade tips grow



radially outwardly and come into centrifugal load carry relationship to the composite ring, whereupon the ring carries a portion of the centrifugal loads thus reducing the strength requirements of the blades and rotor.

3,754,840

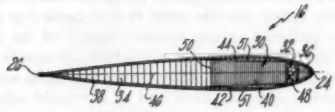
COMPOSITE HELICOPTER ROTOR AND BLADE

Robert Zincone, Norwalk, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 31, 1972, Ser. No. 258,147

Int. Cl. B64c *27/46*

U.S. Cl. 416—226 **29 Claims**



A composite helicopter rotor and balde is produced by building the blade around a selectively fabricated structural spar which includes a central filler member and a plurality of fiber members commencing at the blade tip, extending substantially for its full length to the blade root, extending therebeyond and then folding back upon itself to form a loop, and then extending along the other side of the filler member to substantially the tip of the blade again and being bonded to the opposite sides of the filler member. The spar is then bonded on both upper and lower spar surfaces to the blade cuff attachment member, which includes a pin about which the loop is formed. Redundant retention therefore occurs through either of the bond areas between the cuff attachment member and the fiber members, and by means of the pin-type member. Preferably the fiber members are unidirectional. Additional layers of fiber members are wrapped around the spar at its root end and extend in various directions on opposite sides of the blade so as to form a cylindrical or oval shaped boot to carry blade torsional loads.

3,754,841

VACUUM INTENSIFIED BRAKE BOOSTER SYSTEM

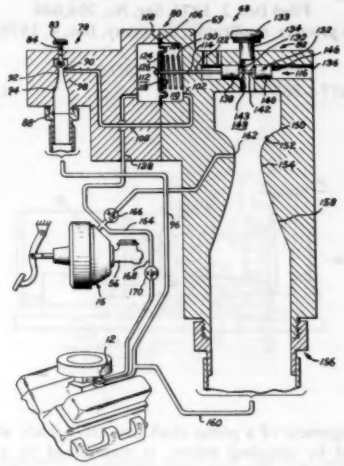
Frederick G. Grabb, and Mark E. Beck, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed May 14, 1971, Ser. No. 143,419

Int. Cl. F04f *5/48*

U.S. Cl. 417—189 **10 Claims**

An apparatus for sensing the available vacuum in a power braking system having the ability to generate an additional source of vacuum which can be combined with the vacuum in



the system to maintain the vacuum in the system within a predetermined range.

3,754,842

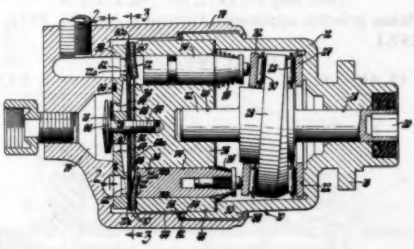
HYDRAULIC PUMP

Manfred P. Schlanzky, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 13, 1971, Ser. No. 142,881

Int. Cl. F04b *21/02*

U.S. Cl. 417—269 **1 Claim**



An axial piston pump having flapper valves on the inlet ports and a continuous flexible ring member providing valving for the outlet ports. The ring member has an elastic sealing surface adjacent to the outlet ports to prevent reverse flow from the pump outlet to the cylinder bores. The ring member is deflected away from the outlet ports when the cylinder bores are pressurized. The deflection of the ring member varies with the amount of fluid flow from the cylinder. Since the amount of fluid flow from a single cylinder in this type of pump is sinusoidal, the outer edge deflection of the ring member is in the form of a sine wave. The ring member also seals the outlet ports to prevent back-flow through the pump when the input shaft is not being driven.

3,754,843

PUMP SUPPORTING AND ALIGNING ARRANGEMENT

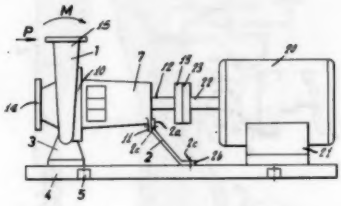
Robert Dernedde, Frankenthal, and Gerd Niermayer, Bremen, both of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pfalz, Germany

Filed Dec. 2, 1971, Ser. No. 204,044

Claims priority, application Germany, Dec. 4, 1970, P 20 59 636.5

Int. Cl. F04b *39/12*

U.S. Cl. 417—363 11 Claims



The alignment of a pump shaft and drive shaft, which are connected by coupling means, is maintained by a slanted resilient leg whose upper end is secured to a projecting housing portion of the pump, and whose lower end is secured to a base plate to which the pump and its drive motor are secured. Turning moments exerted on the pump outlet due to pressure, flow of liquid, and the weight of attached parts, are sustained by the slanted leg.

3,754,844

PUMP AND ELECTRIC DRIVE MOTOR UNIT

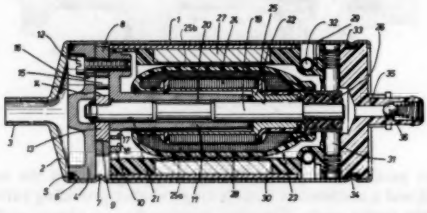
Herman Nusser, Asperg, Germany; Hendricus van Eeden, Johannesburg, South Africa, and Jurgen Ebert, Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 27, 1972, Ser. No. 275,574

Claims priority, application Germany, Aug. 24, 1971, P 21 42 257.1

Int. Cl. F04b *17/00*

U.S. Cl. 417—423 R 9 Claims



There is described a pump assembly which, in a unitary structure, comprises a pump proper and an electric pump drive motor, both contained in a common housing. The pump housing which is disposed within the common housing, has a bearing tube in which journals a shaft carrying the pump impeller and, spaced therefrom, a bell-shaped motor armature surrounding a substantial portion of the bearing tube.

3,754,845

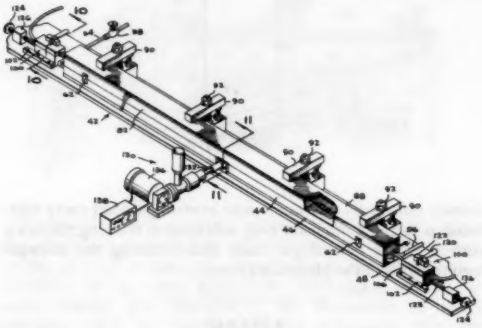
APPARATUS FOR SPLICING JACKETED CABLE

David Albert Rauscher, Columbia, S.C., and Robert Warren Alexander, Fort Lee, N.J., assignors to Carolina Steel and Wire Corporation, Lexington, S.C.

Division of Ser. No. 158,482, June 30, 1971, Pat. No. 3,721,277. This application June 30, 1972, Ser. No. 268,115

Int. Cl. G29c *27/14;* B29c *27/30*

U.S. Cl. 425—111 10 Claims



A method of splicing cable encased in a plastic jacket is disclosed in which the jacket is removed for a given distance inwardly from the ends of the cable to be spliced, the strands are cut and interleaved to provide a mechanical splice portion which is then inserted in a mold and heated to a high temperature, liquid plastic at a high temperature is then injected in the mold to flow into the intestices of the splice and the space surrounding the splice and the mold is then cooled to provide a completely jacketed splice; another aspect of the invention resides in the mold construction in which an inlet is provided centrally of an elongated hollow cylindrical mold with outlets being provided adjacent each end of the mold adjacent the ends of the cable splice so that hot plastic injected into the mold flows outwardly to expel all air in the mold and to consequently provide a more uniform jacket over the splice.

3,754,846

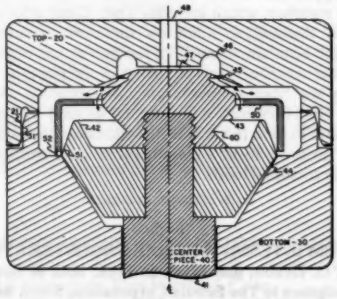
APPARATUS FOR SINGLE CAVITY INJECTION MOLDING OF OIL SEALS

James Robert Choate, Rochester, N.H., assignor to CPI, Inc., Bristol, N.H.

Continuation-in-part of Ser. No. 128,080, March 25, 1971, abandoned. This application Jan. 21, 1972, Ser. No. 219,615

Int. Cl. B29c *27/30;* B29d *3/00;* B29f *1/10*

U.S. Cl. 425—125 12 Claims



In the repetitive single cavity injection molding of an oil seal reinforced with a casing, with vacuum being applied to the

mold cavity, the molding composition is forced rapidly through fine orifices under high pressure and high internal shear into the mold cavity so that a predominant amount of the heat required for curing comes from the mechanical working. A three-part mold of special design is used wherein the orifices are annularly spaced about and formed between the mold top through which injection occurs and a center piece that defines the interior walls of the oil seal. The center piece is of a special three-part construction so that it functions as a vacuum valve and to assist in ejection of the completed seal. A casing of special design is used and mold pins are not required to support and align the casing.

3,754,847

FLAT-DIE FOR EXTRUDING LAMINATED SYNTHETIC RESIN SHEETS

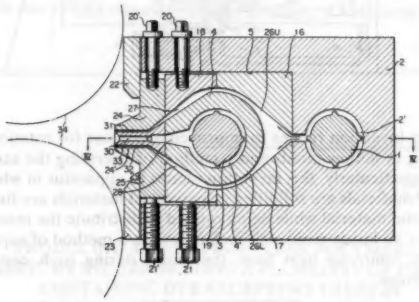
Takehiko Sawada, and Takesi Fujisawa, both of Kawasaki, Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,180

Claims priority, application Japan, July 23, 1970, 45/73024 (utility model)

Int. Cl. B29f *3/02*

U.S. Cl. 425—131 **2 Claims**



A flat-die for extruding laminated synthetic resin sheets is composed of a plurality of flow passages for resins, each of which is connected, at its one end, to a hollow distributing chamber containing a distributing screw to be supplied with the resin from respective extruders and terminates in a lip at its other end, said lips being arranged so that they provide a number of openings lying side by side.

3,754,848

HIGH SPEED SINGLE CAVITY MOLDING APPARATUS

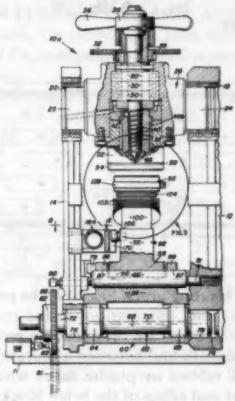
James Robert Choate, Rochester, N.H., assignor to CPI, Inc., Bristol, N.H.

Continuation-in-part of Ser. No. 128,080, March 25, 1971. This application Nov. 10, 1971, Ser. No. 197,206

Int. Cl. B29f *1/02*

U.S. Cl. 425—242 **13 Claims**

An automatic, single cavity injection molding apparatus especially useful for the manufacture of circular shaft oil seals reinforced with a metal case,having a trunnion-mounted, upper assembly through which molding material is injected under high pressure and then is liquefied and heated by being forced through an orifice in an upper mold half, a carriage supporting a pair of lower mold halves alternately pivotal to positions wherein one of said lower mold halves is in mating relationship with the upper mold half and the other is in a second position where the molded article is ejected and a new reinforcing casing can be inserted.



3,754,849

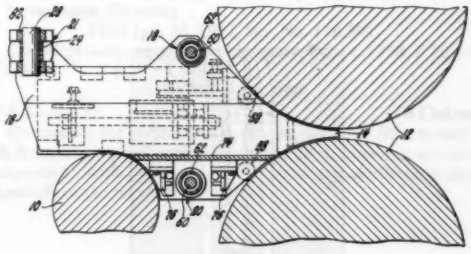
APPARATUS TO CONTROL EDGES OF ROLLED PRODUCTS

Joseph J. Fox, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 8, 1971, Ser. No. 187,797

Int. Cl. B22f *3/18*; B29d *7/14*

U.S. Cl. 425—363 **3 Claims**

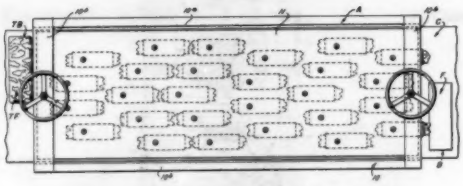


Apparatus is disclosed for restraining and controlling the edges of a mass of material, especially a package of particulate metal, as the material enters the bite of a rolling mill. The apparatus contains two wear block members adapted to fit into the bite region of the rolling mill and to guide and restrain the edges of the material being rolled. The wear members are supported at corresponding ends of substantially parallel frame members, with one wear block on each frame. The frame members are joined together by one or more tie rods and caused to pivot slightly about the tie rods, which act as fulcrums, by means of hydraulic cylinder and piston so as to maintain substantially uniform force through the wear blocks on the material being rolled.

3,754,850
APPARATUS FOR MANUFACTURING SIMULATED AGED BRICKS AND THE LIKE

Rayford L. Pate, 4702 Trenton Dr., Tyler, Tex.

Filed July 7, 1971, Ser. No. 160,466
Int. Cl. B28b *1/29*
U.S. Cl. 425—385 8 Claims

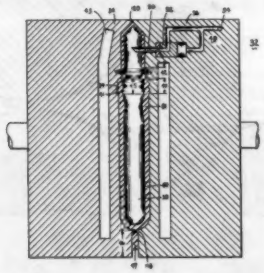


Apparatus for treating green brick blocks prior to firing the blocks to harden them. Indentations in and roughening of the exposed face of the brick are produced by passing the blocks on a conveyor beneath and between a plurality of sets of rollers having hard rubber or plastic faces which engage and round the corners and edges of the brick blocks and may have roughened faces which indent the exposed faces thereof. The rollers are disposed to positively engage the forward and rear edges of the brick blocks extending transversely of the line of movement of the bricks on the conveyor beneath the rollers. If desired, sand or other particulate or comminuted material, or saw dust, may be applied to the upper face portion of the brick prior to treatment by the rollers to produce pits, charcoal effects and the like when the brick is fired or cured. If desired, smooth rollers and sand may be used to form adobe type bricks with rounded edges on the face.

3,754,851
APPARATUS FOR FORMING MULTIAXIALLY ORIENTED CONTAINERS

Joseph R. Reilly, Naugatuck, and Thomas F. Sincock, Simsbury, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed June 1, 1971, Ser. No. 148,544
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 1 Claim

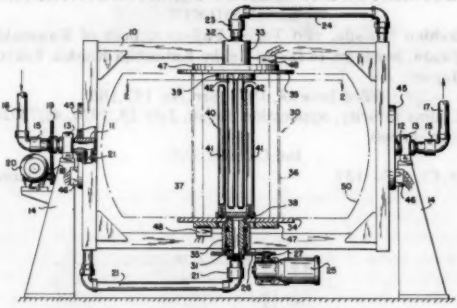


Multiaxially oriented containers are formed from an extruded, molecularly orientable thermoplastic parison having a programmed wall thickness. The parison while at extrusion temperature is sealed at one end and expanded incrementally in a conditioning mold into the shape of a preform which is allowed to set therein for a brief time period in order to develop an outer skin at reduced temperature. The full wall of the variable thickness preform is then reduced in temperature to within the orientation temperature range and the preform then stretched longitudinally and expanded radially in a finishing mold to develop axial and radial orientation while forming the container. Since the thicker portion(s) of the programmed parison do not cool as much in the conditioning mold as do the thinner portion(s) they consequently subsequently stretch to a greater extent, and this phenomenom must be compensated for in the initial programming step. The container finish is preferably formed in the conditioning mold while the thermoplastic is at elevated temperature. The molecularly orientable thermoplastic may be a high nitrile-group-containing polymer having excellent barrier properties of the type covered by the trademark LOPAC.

3,754,852
APPARATUS FOR ROTATIONAL CASTING

Dietrich G. Rempel, Akron, Ohio, assignor to Thomas M. Dodds, Inc., Lakewood, N.J.

Filed Aug. 24, 1965, Ser. No. 482,198
Int. Cl. B29c *5/00*
U.S. Cl. 425—429 5 Claims

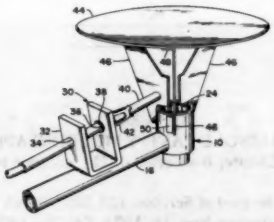


This invention relates to improved apparatus for rotational casting in hollow molds and a method of operating the same; more particularly, this invention relates to apparatus in which liquid materials are solidified or powdered materials are fused to a solid material while being rotated to distribute the material over an inside mold wall surface and to a method of supply and/or removing heat from the molds during such casting operations.

3,754,853
DUAL RATE GASEOUS FUEL BURNER ASSEMBLIES

Henry C. Braucksiek, Buena Park; Jay R. Katchka, Long Beach, and Theodore J. Dykzeul, Rolling Hills, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed June 22, 1971, Ser. No. 155,537
Int. Cl. F23g *9/00*
U.S. Cl. 431—285 10 Claims



Dual rate gaseous fuel burner assemblies wherein a unitary burner is designed to operate at dual rates for full and standby operation in accordance with the fuel flow supplied from a single supply conduit. A flame sensing element is cooperatively disposed upon the burner assemblies such that both the main and standby flame patterns impinge upon the sensing element to provide an effective safety feedback signal for control of the fuel flow to the burner.

3,754,854

DEVICE FOR USE WITH GAS APPLIANCES

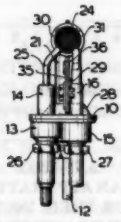
Josef Reutter, Weilheim, and Josef Schmid, Wernau/Neckar, both of Germany, assignors to Junkers & Co., GmbH, Wernau/Neckar, Germany

Filed Apr. 14, 1972, Ser. No. 244,041

Claims priority, application Germany, June 26, 1971, G 71 24 731.9

Int. Cl. F23d *13/24*

U.S. Cl. 431—343 7 Claims



A gas igniting device and a thermo-electric element of an ignition-safety device are mounted on a base plate. A burner tube has a 90° bend and is composed of two mirror-symmetrical shell sections of semi-cylindrical cross-section. This burner tube has an end adjacent to and another end remote from the base plate, and the latter is provided with a pair of upstanding mounting ribs projecting at right angles to one another with one of said ribs extending tangentially of the burner tube and the other being connected to the same so that an annular gap for entry of primary combustion air exists between the base plate and the adjacent end of the burner tube.

3,754,855

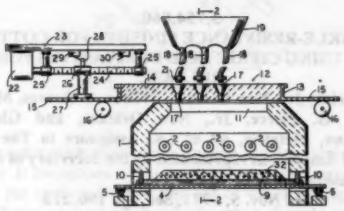
TOWER FURNACE RECIPROCATING FEED

Ernst A. Siemssen, Gwynedd, and John M. Hummel, Doylestown, both of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Aug. 17, 1971, Ser. No. 172,489

Int. Cl. F27b *3/18*

U.S. Cl. 432—14 6 Claims



Apparatus for reciprocating the feed mechanism for a tower furnace in order to obtain a dropping pattern of feed material which will produce a ceramic foam slab with a substantially flat upper surface.

CHEMICAL

3,754,856

PRODUCING A DYED PROPYLENE POLYMERIC FABRIC BY INCORPORATING A PLURALITY OF FIBERS CONTAINING DYE RECEPTORS THEREIN

Robert F. Johnson, Lubbock, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 5, 1969, Ser. No. 822,054

Int. Cl. D06p *1/68*

U.S. Cl. 8—15 7 Claims

A method of producing dyed polymeric materials by incorporating in a polymer fabric a plurality of fibres, each of which contain a dye receptor or a combination of dye receptors.

3,754,857

POLYETHYLENE TEREPHTHALATE, NYLON AND ORGANIC ESTERS OF CELLULOSE DYED WITH 5-(2-NITRO-PrANISYLAZO) BARBITURIC ACID

Donald Edward McKay, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 853,539, Aug. 27, 1969, Pat. No. 3,654,258. This application Mar. 13, 1972, Ser. No. 234,425

Int. Cl. C09b *29/36*; D06p *1/18*

U.S. Cl. 8—41 B 3 Claims

A colorfast strong yellow disperse dye is prepared by coupling 2-nitro-p-anisidine to barbituric acid to form 5-(2-nitro-p-anisylazo) barbituric acid, m. 305°-6°C. It dyes polyesters and organic derivatives of cellulose (including acetate and triacetate), and nylons in greenish yellow shades.

3,754,858

PROCESS FOR CONTINUOUS DYEING POLYESTER FIBER MATERIAL WITH ANTHRAQUINONE DYESTUFF

Volker Hederich; Gunter Gehrke, and Manfred Groll, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

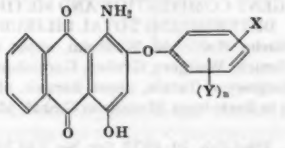
Filed Jan. 28, 1971, Ser. No. 110,591

Claims priority, application Germany, Feb. 4, 1970, P 20 05 012.8

Int. Cl. D06p *1/20*

U.S. Cl. 8—39 8 Claims

Process for the continuous dyeing of synthetic fibre materials from organic solvents wherein the fibre materials are impregnated with dye liquors containing anthraquinone dyestuffs of the formula



in which X, Y and n have the meaning given in the description below and are subsequently subjected to a heat treatment. There are obtained without originating waste waters dyeings which are characterised by excellent fastness properties.

3,754,859

DURABLE TEXTILE SOIL RELEASE AGENT

Richard L. Doerr, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 91,214, Nov. 19, 1920, abandoned. This application June 7, 1972, Ser. No. 260,534

Int. Cl. D06m *15/62, 15/54*

U.S. Cl. 8—115.6 6 Claims

A polyol N-methylol-amino plast composition containing an oxyalkylated phosphoric acid is provided which confers improved soil release properties on cellulosic fibers and blends of cellulosic fibers with polyester fibers having durable press or wash and wear characteristics.

3,754,860

WRINKLE-RESISTANCE FINISHES FOR COTTON FABRIC USING CITRIC ACID DERIVATIVES FOR SOIL RELEASE

John G. Frick, Jr., New Orleans; Wilson A. Reeves, Metairie; Andrew G. Pierce, Jr., New Orleans, and Gloria A. Gautreaux, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 5, 1971, Ser. No. 196,213

Int. Cl. D06m *15/54, 15/56, 15/58*

U.S. Cl. 8—115.6 6 Claims

A process for producing wrinkle-resistant cotton fabric that does not increase the difficulty of laundering; said process comprises the addition of citric acid or monoesters of citric acid to the usual finishing formulations containing a crosslinking agent for cellulose with or without a softening agent.

3,754,861

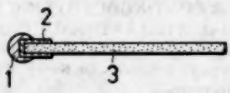
FORMED SOLID FUMIGANT WITH AN IGNITION HEAD

Junichi Sadahiro, Hyogo, Japan, assignor to Daito Match Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Aug. 9, 1971, Ser. No. 169,939

Int. Cl. A01n *17/04*

U.S. Cl. 21—116 1 Claim



A formed solid fumigant of the type used as an incense or insecticide is ignitable only at a relatively high temperature. It is covered at its tip portion with a layer which facilitates ignition of the solid fumigant. An ignition head, ignitable by a relatively low temperature, is provided at the tip of the covering layer.

3,754,862

REAGENT COMPOSITION AND METHOD FOR DETERMINING TOTAL BILIRUBIN

August Wilhelm Wahlefeld, Weilheim, upper Baravis; Erich Bernt, Munich; Wolfgang Gruber, Garatshausen, and Hans Ulrich Bergmeyer, Tutzin, upper Baravis, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Feb. 29, 1972, Ser. No. 230,253

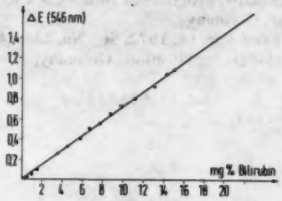
Claims priority, application Germany, Mar. 5, 1971, P 21 10 658.1

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B 12 Claims

Total bilirubin is determined with a stable, accurate, wide-range reagent composition comprising:

a. at least one of the group of chlorophenyl diazonium chlorides consisting of 2,4-dichloro-, 2,5-dichloro- or 2-chloro-4-nitro-phenyl-diazonium chloride and,



b. an alkyl-phenol polyethylene oxide; to produce a color which is then taken as a measure of bilirubin content.

3,754,863

METHOD AND AN APPARATUS FOR DOSING REAGENTS AND FOR THEIR INCUBATION AND FOR SAMPLING REACTION MIXTURE

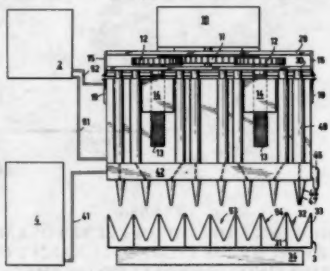
Matti Antero Reunanen, Kupittaank, 11-13 C 38, Turku, Finland

Filed May 10, 1971, Ser. No. 141,511

Claims priority, application Finland, May 12, 1970, 1323/70

Int. Cl. G01n *1/14, 1/16*

U.S. Cl. 23—230 R 13 Claims



A method and an apparatus for dosing reagents and for incubation and sampling of the reaction mixture, in which method the reagents are drawn into the reaction syringes in which the incubation is carried out and in which the samples are discharged from the syringes in one or more portions, the apparatus consisting of a syringe unit, reaction syringes mounted on a single frame which is easy to replace, syringes containing stopping liquid and an internal standard and mounted on a fixed outer frame, vessels for the reagents, instruments for feeding reagents and for the automatic adjustment of the pistons and for transferring absorption plates, and a thermostat. The invention is suitable for reactions and dosing purposes, particularly for macromolecular investigation of radioactive parent substances, where the sample is absorbed into a porous medium and where it is washed automatically.

3,754,864

MICELLE-FORMING PROTECTIVE COLLOID IN COLORIMETRIC ANALYSIS

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Continuation-in-part of Ser. No. 215,638, Jan. 5, 1972. This application Jan. 31, 1972, Ser. No. 222,375

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B 10 Claims

A colorimetric process for accurately determining the concentration of a metal in a protein containing biologic fluid

wherein protein is not present in the standard solution used for calibration. The method is applicable with respect to the use of metal binding reagent dyes having metallized and/or free dye spectra influenced by the presence of protein and permits the spectrum obtained from the protein containing fluid sample to be accurately correlated with the spectrum obtained from the non-protein containing standard solution. The method can be accomplished by adding a particularly selected micelle-forming protective colloid to the standard solution and, preferably, also to the biologic fluid sample being analyzed.

3,754,865

COLORIMETRIC DETERMINATION OF CALCIUM IN BIOLOGIC FLUIDS

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Jan. 5, 1972, Ser. No. 215,638
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **28 Claims**

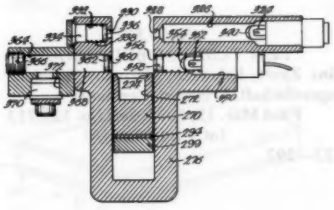
Methylthymol blue dye in colorimetrically analyzing a biologic fluid such as blood serum for calcium content. Analysis can be accomplished in the presence of proteins, phosphates and bilirubin. 8-Quinolinol can be used to bind magnesium without an accompanying adverse effect on the measurement of calcium concentration. Color stable aqueous solutions of the dye are also provided as well as color stability of the calcium-dye complex during analysis.

3,754,866

OPTICAL DETECTING SYSTEM

David Alan Ritchie, and Richard A. Reeves, both of St. Louis, Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed July 30, 1971, Ser. No. 167,377
Int. Cl. G01n *21/24, 33/16*
U.S. Cl. 23—253 R **10 Claims**



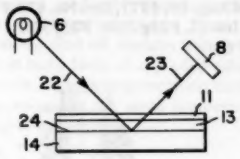
A testing apparatus for automatically determining prothrombin times and other similar factor assays. A turntable conveyor moves successive blood plasma samples in containers to a test station where each sample is tested, pertinent information sensed and fed to a printer for readout. Preliminary to the testing station is a first reagent dispenser where a reagent is dispensed to each sample and a second reagent dispenser is located at the testing station for adding a second reagent. Intermediate the two reagent dispensers is a sample incubation device which intimately contacts each container to apply heat thereto to incubate the sample contained therein. Each reagent dispenser is provided with a reagent reservoir and associated magnetic stirring system. A unique system for decoupling the magnetic stirring system from a magnetic stirrer and moving the magnetic stirrer out of the path of a pipette forming part of each reagent dispenser is provided. At the testing station, a unique photosensitive detection device is provided for sensing the formation of clots after the second reagent is added.

3,754,867

CARBON DIOXIDE SENSING SYSTEM

Karl R. Guenther, Stoughton, Wis., assignor to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 97,072, Dec. 11, 1970, Pat. No. 3,694,164, and a continuation-in-part of Ser. No. 118,022, Feb. 23, 1971, abandoned. This application Sept. 20, 1971, Ser. No. 181,834
Int. Cl. G01n *21/12, 21/20, 21/22*
U.S. Cl. 23—254 R **3 Claims**



Low cost system for sensing carbon dioxide content of ambient air. It comprises a thin layer of a chemical reversibly absorbent for carbon dioxide, the pH of which changes in relation with the amount of absorbed carbon dioxide at any time; an indicator present in said film which changes color in accordance with the pH, and a photoelectric system to produce an electric signal proportionate to said color change.

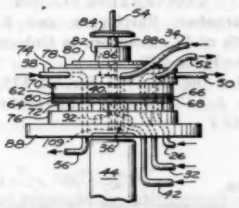
In this system substantial independence of humidity is gained by the use as principal solvent in the said thin layer of an ionizing solvent having a vapor pressure in the range of 0–10 mm at temperatures up to 150°F, and compatible with the other components of the system.

3,754,868

DEVICE FOR PREPARATION OF SAMPLE FOR BIOLOGICAL AGENT DETECTOR

Samuel Witz, Los Angeles, Calif.; Lee T. Carleton, Northport, N.Y.; Howard H. Anderson, Covina; Rudolph H. Moyer, West Covina, both of Calif., and Harold A. Neufeld, Frederick, Md., assignors to Aerojet-General Corporation, El Monte, Calif., by said Witz, Carleton, Anderson and Mayor and The United States of America as represented by the Secretary of the Army, Washington, D.C., by said Neufeld, part interest to each

Division of Ser. No. 52,606, July 6, 1970, Pat. No. 3,690,837. This application Dec. 20, 1971, Ser. No. 210,050
Int. Cl. G01n *1/14, 1/22*
U.S. Cl. 23—254 R **3 Claims**



Filter means for removing microscopic particles from a fluid stream and delivering said particle to equipment for detecting biological agents such as vegetative bacteria, spores and viruses, capable of operating satisfactorily when supplied with minute samples of material to be tested, even when present in a continuous background of matter similar in nature. The equipment utilizes the phenomenon of chemiluminescence and, more particularly, provides the proper conditions for chemiluminescence of luminol by hydrogen peroxide, operating in an intermittent flow system supplied with the agents by

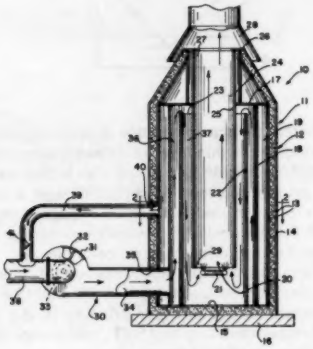
an aerosol particle collector, and in which detection of the chemiluminescence is by a photomultiplier tube the output of which is monitored. Photomultiplier output could be recorded on a chart, magnetic tape or merely designed to set off an alarm when values exceed a prescribed threshold.

3,754,869

FUME INCINERATOR

Earl M. Van Raden, Warren, Mich., assignor to Mahon Industrial Corporation, Saginaw, Mich.

Filed Aug. 19, 1971, Ser. No. 173,193
Int. Cl. F23g 7/06; F23j 5/02
U.S. Cl. 23—277 C **4 Claims**



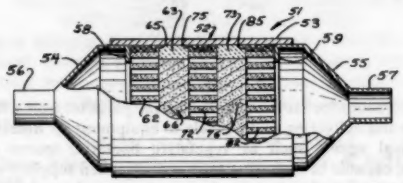
A fume incinerator for afterburning fumes containing air polluting elements includes a casing having a burner disposed in a combustion chamber. The casing includes an outer compartment which is sealed from the combustion chamber and provides a dead air space between the combustion chamber and the outer walls of the casing. A blower receiving fumes from an industrial process or apparatus directs the fumes into the combustion chamber. A conduit in communication with the dead air chamber is in communication with the suction conduit of the blower so that any fumes which may leak into the dead air space or chamber are immediately removed and returned into the combustion chamber, thus preventing leakage of the same through the outer walls of the casing and into the atmosphere.

3,754,870

METHOD AND MEANS OF CATALYTICALLY CONVERTING FLUIDS

Robert D. Carnahan, Barrington, and Karl J. Youtsey, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 26, 1971, Ser. No. 175,237
Int. Cl. F01n 3/14; B01j 9/04
U.S. Cl. 23—288 F **4 Claims**



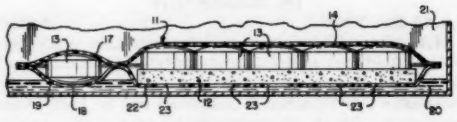
Method and means of catalytically converting fluids such as exhaust gases. The fluid is first passed through a skeletal material zone having a plurality of flow paths in the direction of flow. The skeletal material zone is preferably made catalytically active. Immediately after withdrawing the fluid from the skeletal material zone, the fluid is passed through subdivided catalyst material. These steps may be repeated more than once prior to final withdrawal.

3,754,871

CHEMICAL DISPENSING APPARATUS

Harold H. Hessel, Briarcliff Manor, and Francis S. Kiele, Yonkers, both of N.Y., assignors to Stewart-Hall Chemical Co., Mount Vernon, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,774
Int. Cl. B01d 11/02; C02b 1/18
U.S. Cl. 23—267 A **5 Claims**



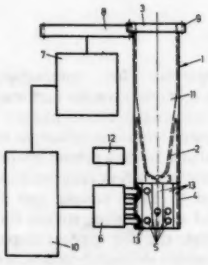
A simplified chemical dispenser apparatus capable of dispensing a predetermined amount of a treatment chemical into a fluid includes a porous matrix exhibiting capillary action when the fluid contacts a surface of the matrix, a fluid treatment chemical composition located on a surface of the matrix, and housing means for covering said chemical composition and at least said chemical bearing matrix surface to shield against dripping or splashing from the top or sides. The housing may be applied as an envelope in which case the chemical supported upon the matrix is sealed therein.

3,754,872

TEST TUBE FOR BODY LIQUIDS

Karl-Heinz Zauft, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 18, 1971, Ser. No. 125,713
Int. Cl. G01n 1/10
U.S. Cl. 23—292 **5 Claims**



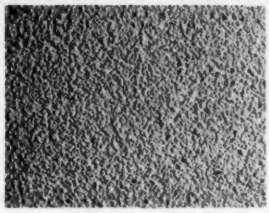
A little test tube is used to receive body liquids in an automated analyzer. The tube has a portion receiving the liquid, a supporting portion and a further portion carrying coded data for identification of the liquid being tested. The invention is particularly characterized in that the shell of the tube extends axially beyond the part receiving the liquid for receiving stamped coded data.

3,754,873

COLD ROLLED SHEET

Max E. Bills, Pleasant Hills Borough, Pa., and Henry J. Hansen, Jr., Portage, Ind., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 792,079, Jan. 17, 1969, Pat. No. 3,619,881. This application Feb. 3, 1971, Ser. No. 112,362
Int. Cl. B21b *1/28*
U.S. Cl. 29—183.5 2 Claims



A cold rolled steel sheet or strip has a plurality of closely spaced, low, generally frustospherical projections of substantially uniform shape and height throughout its surface, the arithmetic average roughness of the surface being between 20 and 400 microinches.

3,754,874

AUTOMOTIVE TRIM MATERIAL

Ray B. Anderson, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 000,478, Jan. 2, 1970, Pat. No. 3,648,353. This application Aug. 30, 1971, Ser. No. 176,238
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.1 2 Claims

An automotive trim material to be detachably mounted on a painted steel automotive body by means of clips secured to the body is shown to comprise a composite metal laminate material having an outer layer of stainless steel disposed exteriorly of the trim configuration, an intermediate layer of mild steel material, and an opposite outer surface layer of aluminum material, said laminate layer materials being metallurgically bonded together in the solid phase, the stainless steel layer being in scratch-resistant, cold-worked condition, the mild steel layer being in easily formed, annealed condition, and the interface between the mild steel and the aluminum layers being substantially free of embrittling aluminum-iron intermetallic compounds.

3,754,875

Patent Not Issued For This Number

3,754,876

UPGRADING LOW RANK COALS AS FUEL

Robert E. Pennington; Hermann E. von Rosenberg, both of Baytown, Tex., and Jack M. Hochman, Morris Plains, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 10, 1971, Ser. No. 206,819
Int. Cl. C10l *5/00;* C10g *1/00*
U.S. Cl. 44—1 B 12 Claims

A process in which lumps of sub-bituminous or lower rank coal are heated to pyrolysis temperatures of up to about 1,000° F. by contact, preferably countercurrent, with an inert hydrogen-poor hydrocarbonaceous heat transfer fluid, preferably a coal-derived oil, thereby transforming the coal to a char product in lump form of upgraded calorific value, such product, moreover, being less pyrophoric than a char product produced by pyrolysis at the same temperatures in an inert gaseous (nitrogen) atmosphere.

3,754,877

GELLED FUEL COMPOSITIONS

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 4, 1972, Ser. No. 223,762
Int. Cl. C10l *7/04*
U.S. Cl. 44—7 B 10 Claims

Disclosed are combustible gels comprised of an aliphatic alcohol and a crosslinked olefin-modified hydroxyalkyl cellulose. These gels find utility as fuels for chafing dishes and the like, as flares, and for decorative lighting purposes. Color producing inorganic materials can be added for pyrotechnic applications.

3,754,878

ABRASIVE CLEANING COMPOSITIONS

Richard L. Burke, San Diego, Calif., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 668,667, Sept. 18, 1967, abandoned. This application Jan. 4, 1971, Ser. No. 103,821
Int. Cl. B24d *3/02*
U.S. Cl. 51—307 7 Claims

This disclosure relates to abrasive cleansing compositions having particular utility as a metallic stain remover from hard surfaces such as porcelain, comprising an oxidant capable of oxidizing the metal in a practical time such as the metallic ions ferric, stannous, cupric and mercuric, a halide promotor, and an abrasive, said composition having a pH of 0.5 – 5. Additives such as detergents, perfumes, fillers, colorants, etc. may be included provided they do not adversely effect the stain removing properties of the composition. Although aluminum pot marks are most often encountered in normal household cleaning, said cleansers are effective against other metallic stains such as iron, tin, magnesium, etc.

3,754,879

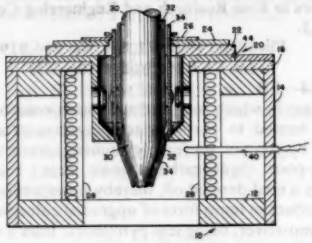
METHOD FOR FORMING A DOUBLY CLAD GLASS MONOFIBER ELEMENT HAVING A LOW VISCOSITY OUTER CLADDING

Roland A. Phaneuf, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 29, 1970, Ser. No. 85,204
Int. Cl. C03c *23/20*
U.S. Cl. 65—4 2 Claims

A glass core is assembled in a glass cladding tube and a plurality of rods of low viscosity glass is fused at regular intervals around the outside of the cladding tube. The fusing process occurs at the mono drawing stage. The assembly is drawn through a ring in the drawing furnace immediately subsequent

to the point where the cladding tube is collapsed against the core by a vacuum which is drawn between the cladding and



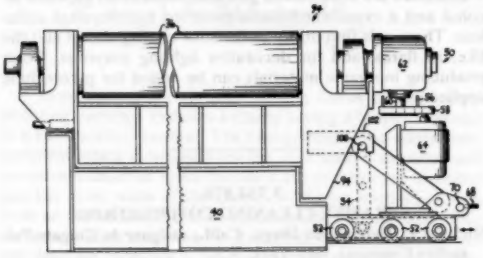
core. In this manner, the rods are forced against the cladding tube, thereby fusing the rods on the surface of the cladding.

3,754,880

CHANGING LIFT-OUT ROLLS SUPPORTING A CONTINUOUS RIBBON OF GLASS

David J. Henderson, Pittsburgh, and Mike Godich, Jr., McKeesport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 9, 1971, Ser. No. 178,983
Int. Cl. C03b *15/02*
U.S. Cl. 65—27 **3 Claims**



The instant invention improves the float-glass process, transforming the operation of changing of a lift-out roll from one that requires a shutdown of three to four days to one that may be conducted without interruption of the production of float-glass ribbon. Hardware related to the dross box is modified to permit a lift-out roll to be moved substantially axially, preferably along with its associated bottom seal. The equipment used preferably includes first (end) and second (center) support-carriage means; these operate to permit continual rotation of the lift-out roll during the removal operation to prevent warpage.

3,754,881

ART OF PRODUCING INORGANIC BODIES HAVING AT LEAST A SURFACE LAYER WHICH IS SEMICRYSTALLINE

Richard W. Petticrew, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 486,191, Sept. 9, 1965, abandoned. This application Mar. 27, 1969, Ser. No. 812,960
Int. Cl. C03c *3/22*
U.S. Cl. 65—33 **1 Claim**

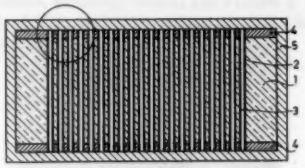
This patent pertains to a method for producing a crystalized glass article in which a glass containing 50.8 percent SiO_2, 8.2 percent Al_2O_3, 22.5 percent Zno and 18.5 percent CaO is roughened on an exposed surface such that it has a frosted appearance and thereafter is crystalized on the surface by controlled heating, below the softening temperature to initiate and obtain, crystalization.

3,754,882

METHOD OF MANUFACTURING A LIGHT CONDUCTIVE PERFORATED PLATE

Johannes Van Esdonk, and Jacobus Hubertus Jacobs, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 78,076, Oct. 5, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,417
Int. Cl. C03b *23/02, 23/20*
U.S. Cl. 65—42 **7 Claims**



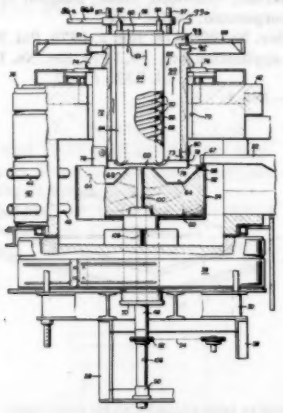
A method of manufacturing a perforated plate comprising placing a plurality of tubes in the holes of at least one perforated base plate, and filling the space between the tubes with a material having a lower softening temperature than that of the tubes. This formed block is then cut in a direction transverse to the tubes to form thinner perforated plates.

3,754,883

GLASS TUBE FORMING APPARATUS AND METHOD

George E. Keefer, and Yu K. Pei, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 19, 1971, Ser. No. 144,973
Int. Cl. C03b *15/14*
U.S. Cl. 65—88 **16 Claims**



An improved process and apparatus for forming glass tubes or rods from a readily devitrifiable glass composition by an updraw process in which molten glass at a controlled temperature flows inwardly over the periphery of a rotating pan to form a shallow pool therein. The rotating pan has a central cone around which the root of the glass tube is formed, the tube being drawn upwardly by overhead draw rolls which rotate concentrically and in synchronism therewith. The wall thickness and diameter of the tube being drawn is controlled, in part at least, by maintaining with extreme accuracy the difference in level between the point of glass introduction into the pan and the point of the tube withdrawal. Preferably, the level of glass in the pan is controlled by allowing molten glass to spill over the edge of the pan. Preferably, the pan is heated by combustion burners playing on the pan, and flame shield is

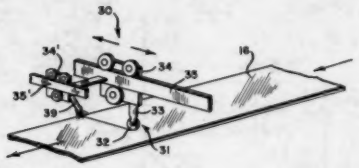
interposed in the path of the flames, the heat and the shield maintaining an exact temperature differential between the body of glass and the glass at the tube-forming central portion of the pan.

3,754,884

GLASS CUTTING METHOD AND APPARATUS

James C. McDavid, and Russell H. Miles, Jr., both of Kingsport, Tenn., assignors to ASG Industries, Inc., Kingsport, Tenn.

Continuation-in-part of Ser. No. 771,385, Oct. 29, 1968, abandoned. This application July 15, 1971, Ser. No. 162,968
Int. Cl. C03b 21/00
U.S. Cl. 65—97 16 Claims



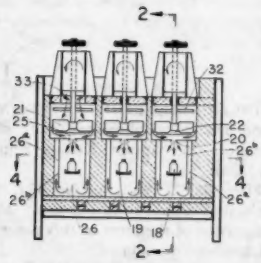
A method and apparatus for cutting glass sheets from a glass ribbon in the continuous production of glass. The glass ribbon, after it is formed from molten glass material, is brought to a temperature corresponding to the strain point of the glass and cut while at this temperature into successive sheets.

3,754,885

JET FIRED ZONAL LEHR FOR APPLYING TREATING MEDIUM INSIDE AND OUTSIDE OF GLASS CONTAINERS SIMULTANEOUSLY

Edward W. Bowman, Uniontown, Pa., assignor to E.W. Bowman, Incorporated, Uniontown, Pa.

Filed Nov. 10, 1971, Ser. No. 197,302
Int. Cl. C03b 25/04
U.S. Cl. 65—119 8 Claims



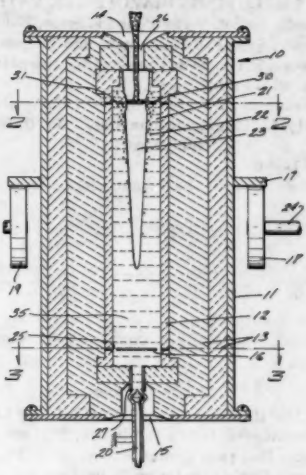
This disclosure relates to a method and apparatus for annealing glassware by passing the ware continuously through a tunnel in which the application of heat and recirculation of the gaseous treating medium is regulated to establish and maintain independently controllable heating and cooling zones. An endless perforated conveyor passes from end to end of the tunnel and the ware is placed on the conveyor in alignment with and beneath a jet-like blast of the treating medium internally and externally of the ware simultaneously to subject all of the ware to uniform treatment in minimum time. The treating medium in the heating zones of the tunnel is recirculated and furnace pressure and temperature is regulated by circulating fans and by dampers between the furnace chambers with the outside atmosphere.

3,754,886

METHOD FOR REFINING MOLTEN GLASS

Raymond S. Richards; Robert R. Rough, and Douglas F. St. John, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 2, 1971, Ser. No. 130,672
Int. Cl. C03b 5/18
U.S. Cl. 65—134 29 Claims



A method of removing undesirable gaseous inclusions, also known as seeds and bubbles, from seed containing or unrefined molten glass by continuously introducing this unrefined molten glass into a rapidly rotating contained glass mass, subjecting the unrefined molten glass mass to centrifugal forces substantially greater than gravity, and developing static pressure differences in the glass mass, resulting in pressure gradients in the molten glass and causing the gaseous inclusions to migrate to areas of lower static pressure and to the atmosphere from the molten glass, and subjecting the partially refined molten glass to increased centrifugal forces to remove additional gaseous inclusions, delivering refined molten glass from the contained glass mass, having reduced numbers of gaseous inclusions.

The refining apparatus is a container for holding molten glass mounted for rotation about its axis of rotation. A refractory-lined chamber within the container holds molten glass; the container has a centrally located top inlet, and a centrally located outlet at the bottom of the container. A slinger plate is positioned near the top inlet for diverting the entering molten glass stream within the container. A diverter plate is positioned within the container near the outlet of the container and causes the molten glass to flow adjacent the chamber wall on the way to the discharge, then subjecting the molten glass to an increased centrifugal force, and increasing the number of gaseous inclusions removed from the molten glass.

The container has a flange, encircling the outside thereof. Pair of rotatable driving wheels support the flange and provide means for rotating the container.

3,754,887

UREIDOPYRAZOLES AS DEFOLIANTS

Richard Kirven Brantley, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 822,001, May 5, 1969, Pat. No. 3,646,059. This application Feb. 25, 1972, Ser. No. 229,555
Int. Cl. A01n 9/22
U.S. Cl. 71—74 8 Claims

Certain ureidopyrazoles, such as 5-(3-phenylureido)-1,3-dimethylpyrazole, 5-[3-(2-fluorophenyl)ureido]-4-chloro-

1,3-dimethylpyrazole, and 5-[3-(3-fluorophenyl)ureido]-1,3-dimethylpyrazole, are effective as plant growth modifiers. The ureidopyrazoles are particularly useful as defoliants on cotton, soybean, and dry bean plants.

3,754,888

HERBICIDAL COMPOSITION AND METHOD EMPLOYING THIAZOLE DERIVATIVES

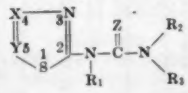
Jean Claude Fuillot, 9 rue Paul Langevin, Eaubonne; Pierre Poignant, 15 rue Fabregue, Lyon, and Jacques De Baselairie de Lesseux, 7 Avenue de l'Imperatrice Josephine, Rueil-Malmaison, all of France

Continuation-in-part of Ser. No. 540,192, April 5, 1966, Pat. No. 3,551,442. This application Mar. 2, 1970, Ser. No. 15,899

Int. Cl. A01n *9/12*

U.S. Cl. 71—90 **13 Claims**

A thiazole derivative having the general formula



and pesticidal compositions containing the same.

3,754,889

HIGHLY FLUXED IRON OXIDE PELLET

Ezekiel Dominguez; Henry W. Hitzrot, Jr., both of Bethlehem, and John D. Lynn, Center Valley, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 14, 1970, Ser. No. 80,728

Int. Cl. C21b *1/08, 1/28, 1/10*

U.S. Cl. 75—3 **6 Claims**

A highly fluxed iron oxide pellet containing about 50 percent to about 95 percent iron oxide, about 20 percent calcium oxide plus magnesium oxide, not more than 10 percent silica, not more than 2 percent alumina, the remainder incidental impurities. The ratio of the calcium oxide plus magnesium oxide to the silica plus alumina in the pellet may be from about 0.5:1 to about 4.5:1. The ratio of calcium oxide to magnesium oxide on a weight basis in the pellet is from about 90 to 10 percent to about 80 to 20 percent, respectively.

The pellet of the invention is produced by forming a mix of about 60 to 95 percent iron ore concentrate, about 40 to about 5 percent flux, a binder and moisture. The mix is balled in an apparatus, for example a balling disc. The green balls are dried at a temperature not higher than 500° F. The dried green balls are fired within a temperature range of 2150° F. to 2350° F. to form pellets. The pellets are cooled to room temperature.

3,754,890

PROCESS FOR PRODUCING METALLIZED AGGLOMERATES AND RECOVERY OF NON-FERROUS VALUES FROM WASTE MATERIALS

Arthur L. Fitch, Mars, Pa., assignor to Harsco Corporation, Wormleysburg, Pa.

Continuation of Ser. No. 36,719, May 13, 1970, abandoned. This application Sept. 17, 1971, Ser. No. 181,592

Int. Cl. C21b *1/30*

U.S. Cl. 75—3 **6 Claims**

A process and system for producing metalized iron agglomerates and for recovery of zinc values from waste materials, in dust form, including comminuting and drying the dust. Collecting and separating the dust in accordance with the content of the zinc values and proportionately blending the dust to provide a product having a substantially uniform zinc value content for pelletizing into green balls. Drying and indurating the green balls and reducing the indurated balls with a reductant to provide highly metalized balls and volatilization of the zinc values. Recovering the volatilized zinc values, as exhaust gases, to provide metalized balls having a high iron content substantially free of zinc values.

3,754,891

METHOD OF PRODUCING IRON-POOR NICKEL SULPHIDE MATTE FROM SULPHIDIC NICKEL CONCENTRATES IN SUSPENSION SMELTING THEREOF

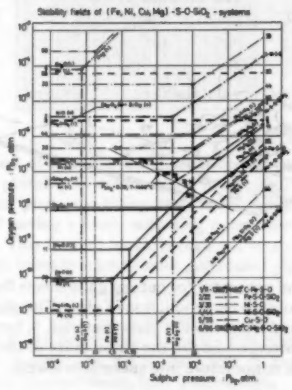
Petri Baldur Bryk, Helsinki; Jorma Bruno Honkasalo, Westend; Rolf Einar Malmstrom, Pori; Simo Antero Livari Makipirtti, Nakkila; Toivo Adrian Toivanen, Harjavalta, and Olavi August Aaltonen, Pori, all of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Mar. 29, 1971, Ser. No. 128,803

Claims priority, application Finland, Apr. 10, 1970, 1000

Int. Cl. C22b *15/00, 1/02, 15/04*

U.S. Cl. 75—23 **6 Claims**



A fine-grained concentrate of sulphide ore is suspended by a special disperser into a heated downward flow of air, air enriched with oxygen or oxygen containing gas in a vertical reaction shaft of a furnace to oxidize non-oxidic metal compounds in the concentrate. The gases and flue dust are separated from the solids which form a smelt on the furnace bottom which smelt consists of a matte and a slag on the matte. Oxidation of matte in the lower furnace and incorporation of nickel oxide into the slag are prevented by reducing trivalent iron and nickel oxides in the lower part of the reaction shaft before the gases enter the lower furnace. The reduction is effected by increasing the partial pressure of sulphur of the gases and/or by decreasing the partial pressure of oxygen.

3,754,892

CONTINUOUS METHOD OF STEEL MAKING

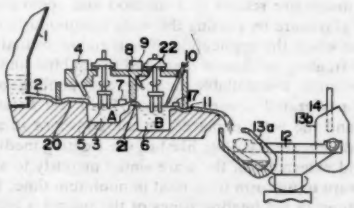
Ryo Ando, and Tsutomu Fukushima, both of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa, Japan

Filed May 2, 1969, Ser. No. 821,385

Claims priority, application Japan, May 9, 1968, 43/30563. The portion of the term of this patent subsequent to July 13, 1988, has been disclaimed.

Int. Cl. C21c *7/00, 7/06*

U.S. Cl. 75—46 **8 Claims**



Steel is made continuously by mechanically agitating molten pig iron and slag proximate their interface and simultane-

ously passing oxygen onto that interface whereupon the pig iron is desulphurized and dephosphorized. The pig iron product is then decarbonized by treatment with oxygen.

3,754,893

PURIFICATION OF STEEL

James J. Frawley, Albany; Silvio S. Gras, Schenectady, both of N.Y., and Louis D. Tote, Erie, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 8, 1971, Ser. No. 122,141
Int. Cl. C21c 7/02, 7/06
U.S. Cl. 75—58 6 Claims

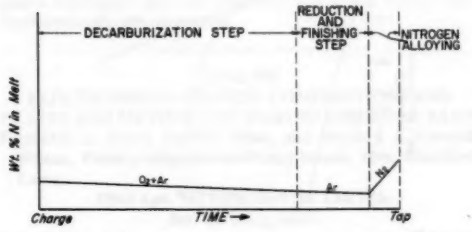
A process of essentially removing the aluminum oxide inclusions from molten steel which has been aluminum-deoxidized. The process comprises the addition to the aluminum-containing molten steel of from about 0.01 to about 0.05 percent by weight of magnesium based on the weight of the steel.

3,754,894

NITROGEN CONTROL IN ARGON-OXYGEN REFINING OF MOLTEN METAL

Joseph Michael Saccomano; John Douglas Ellis, Jr., both of Ft. Wayne, Ind.; Richard Jay Choulet, Phoenix, Ariz., and Frank Stuart Death, Carmel, N.Y., assignors to Joslyn Mfg. and Supply Co., Chicago, Ill. and Union Carbide Corporation, New York, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,733
Int. Cl. C21c 7/04; C22b 23/06; C22c 39/00
U.S. Cl. 75—60 25 Claims



The nitrogen content of molten metal may be controlled during refining by the selective subsurface injection of nitrogen during argon-oxygen decarburization. Nitrogen may be used to replace the argon entirely during the early stages of decarburization, and partially in the latter stages. In addition, nitrogen injection may be used after decarburization has been completed to achieve a final upward adjustment in the nitrogen conent of the metal.

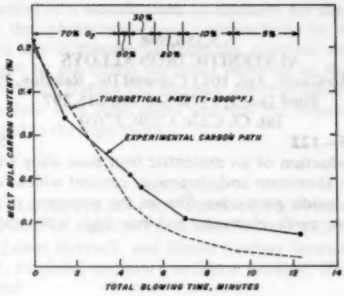
3,754,895

PROCESS FOR DECARBURIZATION OF STEELS

Sundaresan Ramachandran, Natrona Heights, and Basil U. Igwe, New Kensington, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 801,017, Feb. 20, 1969, abandoned. This application Jan. 27, 1971, Ser. No. 110,324
Int. Cl. C21c 5/34
U.S. Cl. 75—60 4 Claims

Described herein is an improved process for decarburization of straight carbon as well as alloy-bearing steels without the loss through oxidation of valuable metallic alloying ele-



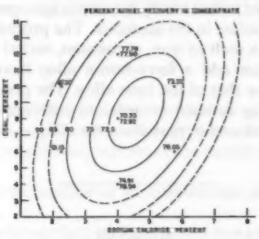
ments such as chromium, manganese, and iron, by careful control of the input of oxidizing material.

3,754,896

PROCESS FOR RECOVERING NICKEL FROM VERY LOW GRADE PRIMARY NICKEL ORES

Iwao Iwasaki, Minneapolis, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Aug. 11, 1970, Ser. No. 62,837
Int. Cl. C22b 23/00, 3/00
U.S. Cl. 75—82 10 Claims



A process for recovering nickel from primary rock materials with a very low nickel content characterized by massive occurrences therein of a relatively uniform and very low grade of nickel in the form of sulphides, oxides, alloys and silicates, very low sulphur and low copper and iron values, low sulphur to nickel ratios and the absence or negligible occurrences of pyrrhotite. The process comprises the grinding of the rock materials to fine particles, adding sodium chloride or other alkali metal chlorides and coal, by itself or in combination with other carbonaceous reducing agents, roasting the resulting mixture in a near neutral atmosphere at temperatures from 800° to 1100°C. for a sufficient time to effect conversion of a substantial amount of the nickel content to nickel in metallic, alloy or oxide forms, cooling the resulting mixture under non-atmospheric conditions to a non-reacting temperature and removing the magnetic fraction from the roasted mixture by magnetic separation procedures.

3,754,897

MELTING OF METALS

Leslie Jack Derham, deceased, late of Avonmouth, England, and by Michael Gordon Derham, administrator, 20 Ridgehill, Henleaze, England

Continuation of Ser. No. 810,088, March 21, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,234
Int. Cl. C22b 9/10, 21/06; C22b 13/06
U.S. Cl. 75—96 12 Claims

A method of purifying or preventing oxidation of metals is achieved by covering the metals in the molten state with a flux

containing a molten double salt of sodium chloride and aluminum chloride. Other alkali or alkaline earth metal halides may additionally be included in the flux.

3,754,898

AUSTENITIC IRON ALLOYS

James A. McGurty, Apt. 101J Colonial Dr., Reading, Pa.

Filed Jan. 7, 1972, Ser. No. 216,297
Int. Cl. C22c *37/00, 37/10*
U.S. Cl. 75—122 **5 Claims**

The production of an austenitic iron base alloy with relatively high aluminum and chromium content which forms an aluminum oxide protective film in the presence of yttrium and/or rare earth elements and has high temperature resistance.

3,754,899

AUSTENITIC ALLOY CONTAINING BORON, AND PROCESSES FOR MANUFACTURING THE SAME

Jerome J. Kanter, Palos Park, Ill.

Filed Dec. 14, 1970, Ser. No. 98,101
Int. Cl. C22c *39/20, 39/54*
U.S. Cl. 75—129 **8 Claims**

An austenitic ferrous base alloy characterized by improved stability at high temperatures, and by improved resistance to sensitization and to corrosion, cracking, and general deterioration. The austenite is an iron-chromium-nickel alloy containing from 0.01 to 0.2 percent boron, less than 0.009 percent carbon, and substantially free from nitrogen and oxygen. The boron is a solute in the austenite. The process of manufacture is to form a melt of iron, chromium, nickel and other additives, and then add a ferro-boron alloy having a melting point well below that of the base alloy. The process is carried out in a vacuum furnace in order to substantially eliminate carbon, nitrogen, and oxygen from the alloy.

3,754,900

PRODUCTION OF LOW-NITROGEN HIGH-CHROMIUM FERROUS ALLOYS

Egil Aukrust, Bethel Park, and T. Grant John, Pittsburgh, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1971, Ser. No. 134,831
Int. Cl. C22c *33/00*
U.S. Cl. 75—130.5 **8 Claims**

A low-nitrogen low-carbon high-chromium steel is made by forming a melt of chrome ore, iron ore and lime, reducing the melt with silicon or ferrosilicon out of contact with the ambient air, and teeming the underlying metallic phase also out of contact with the ambient air into a mold.

3,754,901

EVAPORATION SOURCE FOR DEVICE METALLIZATION

Edward L. Hall, and Elliott M. Philofsky, both of Phoenix, Ariz., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 24, 1972, Ser. No. 237,954
Int. Cl. C22c *21/02, 21/04*
U.S. Cl. 75—141 **1 Claim**

An evaporation source is provided for device metallization. The evaporation source, an aluminum alloy, comprises the chemical composition in percent by weight: 0.5 silicon, 0.5 iron, 3.8 to 4.9 copper, 0.3 to 0.9 manganese, 1.2 to 1.8 magnesium, 0.1 chromium, 0.25 zinc, balance aluminum.

3,754,902

NICKEL-BASE SUPERALLOY RESISTANT TO OXIDATION-EROSION

Donald H. Boone, North Haven; David N. Duhl, Newington, and George W. Goward, North Haven, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 5, 1968, Ser. No. 734,706
Int. Cl. C22b *61/00*
U.S. Cl. 75—171 **2 Claims**

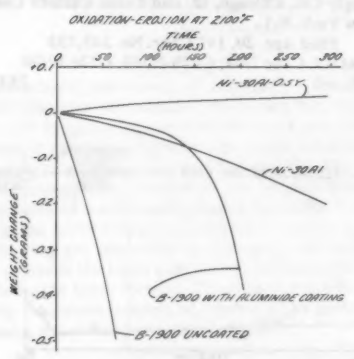
Nickel-base superalloys are described which oxidize selectively to form a single protective oxide Al_2O_3 which is particularly adherent to the alloy surface. Alloys of the nickel-chromium-aluminum type are disclosed in a basic chemistry corresponding to, by weight, 4–7 percent aluminum, 12–21 percent chromium, 19–25 percent aluminum plus chromium, 0.01–0.5 percent yttrium or similar material, balance nickel with the usual alloying ingredients associated with the superalloys.

3,754,903

HIGH-TEMPERATURE OXIDATION-RESISTANT COATING ALLOY

George W. Goward; Donald H. Boone, and Frederick S. Pettit, all of North Haven, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 734,740, June 5, 1968. This application Sept. 15, 1970, Ser. No. 72,512
Int. Cl. C22c *19/08*
U.S. Cl. 75—171 **2 Claims**



A coating alloy for the gas turbine engine super-alloys is described which consists primarily of nickel, aluminum and a reactive metal such as yttrium, particularly at the composition, by weight, 14–30 percent aluminum, 0.01–0.5 percent reactive metal balance nickel. A preferred embodiment also includes 15–45 weight percent chromium.

3,754,904

ZINC-ALUMINUM ALLOY

Erich Pelzel, Puchheim, Germany, assignor to Stolberger-Zink AG Fur Bergbau Und Huttenbetrieb, Aachen, Germany

Filed Mar. 3, 1971, Ser. No. 120,718
Claims priority, application Germany, Mar. 5, 1970, P 20 10 299.2
Int. Cl. C22c *17/00*
U.S. Cl. 78—178 A **6 Claims**

A zinc-aluminum alloy comprises 18-24 % aluminum, 0.0005 - 0.05 % magnesium, 0.0025 - 0.25 % nickel, balance high-grade zinc.

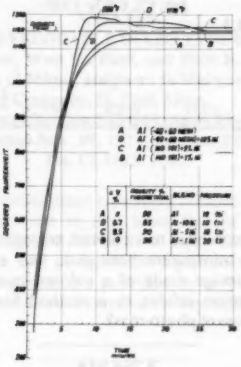
The form stability of the alloy can be improved by homogenizing it at a temperature above 275° to 380° C and aging it at a temperature above 80° C up to below 275° C for a time of 0.2 to 5 hours.

The alloy has a high ductility, together with a high creep resistance.

3,754,905
EXOTHERMIC STRUCTURING OF ALUMINUM

Walter V. Knopp, Wyckoff, N.J., assignor to A. Johnson & Co. Inc., New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,310
Int. Cl. B22f *1/00*
U.S. Cl. 75—227 29 Claims



Strongly bonded aluminous bodies with produced by powder metallurgy by blending an amount of nickel powder with aluminum powder at least sufficient to effect the exothermic sintering of a pressed compact of the blended powder by heating the compact in a furnace maintained at a temperature below the eutectic temperature of the aluminum-nickel system and higher than the temperature at which nickel reacts exothermically wth aluminum.

3,754,906
ELECTROPHOTOGRAPHIC COMPOSITIONS AND PLATES AND METHODS OF MAKING AND USING SAME

Frederick L. Jones, Dayton, Ohio, and Richard A. Connell, Wilton, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 16, 1971, Ser. No. 134,730
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.4 12 Claims

A photoconductive composition and electrophotographic plates made therefrom are disclosed comprising the combination of particulate cadmium sulfoselenide and zinc oxide pigments as the photoactive constituents. The plates have increased electrophotographic speed and broad spectral response for use in electrophotography. In the processing of the photoconductive composition heating of the pigments results in improved charge acceptance and electrophotgraphic speed of a plate made from the composition. The plate compositions disclosed comprise a styrene modified alkyd resin binder in which the Cd(SSe)-ZnO pigments are dispersed.

3,754,907
METHOD FOR TRANSFERRING A DYE IMAGE AND ELECTROPHOTOGRAPHIC COPY PROCESS EMBODYING SAME

Leo N. Chapin, Des Plaines, Ill., assignor to A. B. Dick Company, Chicago, Ill.

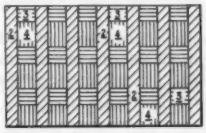
Filed Dec. 1, 1970, Ser. No. 94,120
Int. Cl. G03g *7/00, 9/04, 13/12*
U.S. Cl. 96—1.4 22 Claims

This invention is addressed to a method for transferring a dye image from an imaged receptor sheet having at least one photoconductive composition of the face thereof containing a photoconductor, a resinous binder, a sensitizer for the photoconductor and a dispersed dye which has been developed with a solid toner in the form of a material which, when heated to a molten state, is a solvent for the dispersed dye in the photoconductive composition, in which the dispersed dye is transferred from the receptor sheet to the copy sheet by pre-fusing the toner particles on the receptor sheet and then placing the receptor sheet in surface contact with the face of a copy sheet whereby the dispersed dye is transferred to the copy sheet.

3,754,908
ELECTROPHOTOGRAPHIC PRODUCTION OF COLOUR PHOTOCONDUCTIVE MOSAIC MATERIAL

Robert James Hercock, and Simon Lindsay Scrutton, both of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

Continuation-in-part of Ser. No. 93,925, Dec. 1, 1970, abandoned. This application Apr. 13, 1972, Ser. No. 243,731
Claims priority, application Great Britain, Dec. 8, 1969, 59,824/69
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.2 12 Claims



A process for the production of colour photoconductive material of the mosaic type, wherein areas of the material are sensitive only to selected regions of the visible spectrum which comprises:

a. charging the surface of an unsensitized photoconductive material,
b. exposing the surface of the material to a pattern of light,
c. toning the areas remaining charged on the surface of the photoconductive material by a dye sensitizer which sensitizes them to light of one of the selected regions of the spectrum,
d. recharging the surface of the photoconductive material,
e. exposing the surface overall to light which comprises all the regions of the visible spectrum to which areas thereof have been sensitized to destroy the charge on the material selectively in such areas,
f. exposing the surface of the material to a different pattern of light of such wavelength to which the unsensitized photoconductor layer is sensitive,
g. toning the areas remaining charged on the surface of the photoconductor by means of a dye sensitizer which sensitizes them to light of a selected region of the spectrum to which no area of the surface of the material is at present sensitive and repeating steps (d), (e) and (g).

3,754,909
POLYESTER COATED PAPER AS A CONDUCTIVE SHEET MATERIAL

Joseph Feltzin, and Erich Kuehn, both of Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Continuation of Ser. No. 97,391, Dec. 11, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,192
Int. Cl. G03g *5/00;* D21f *13/00*
U.S. Cl. 96—1.5 12 Claims

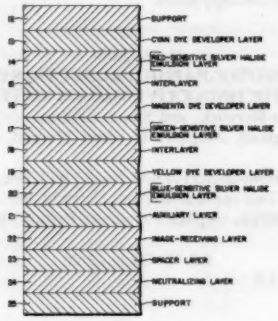
An electrically conductive sheet material prepared from paper and a particular class of polyester resins is disclosed. The use of this conductive paper as the substrate in preparing a photoconductive recording sheet material is also disclosed.

3,754,910

NEUTRALIZING LAYERS IN DIFFUSION TRANSFER PHOTOGRAPHIC FILM

Lloyd D. Taylor, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1971, Ser. No. 208,616
Int. Cl. G03c *7/00*
U.S. Cl. 96—3 **23 Claims**



Photographic systems employing an acid neutralizing layer comprising a polymeric salt of a monomeric strong acid and a polymeric weak base, i.e., polymeric salts which hydrolyze to give an acid reaction.

3,754,911

PHOTOIMAGING METHOD COMPRISING CROSSLINKING OF ALKOXY METHYL POLYAMIDES

Viron V. Jones, Caldwell, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Division of Ser. No. 53,276, July 8, 1970, Pat. No. 3,695,887. This application Mar. 6, 1972, Ser. No. 232,196
Int. Cl. G03c *5/00*
U.S. Cl. 96—35.1 **3 Claims**

Alkoxy methylated polyamide resin layers are imagewise insolubilized by exposure to light in the presence of halogenated organic photoinitiator compounds. The compositions are greatly improved in light sensitivity by the addition of dyes, and exposed layers are developable by selective dissolution in unexposed areas with aqueous developer solutions to form direct images, resists, or reprographic masters.

3,754,912

CHEMICAL MILLING USING FUSED POWDER PARTICLES AS RESIST

Rexford W. Jones, and William B. Thompson, both of Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 796,847, Feb. 5, 1969, abandoned, and a continuation-in-part of Ser. No. 833,771, June 16, 1969, Pat. No. 3,677,759, and a continuation-in-part of Ser. No. 849,520, Aug. 12, 1969, abandoned, and a continuation-in-part of Ser. No. 123,084, March 10, 1971, abandoned. This application Sept. 27, 1971, Ser. No. 183,802
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 **10 Claims**

Method of chemical milling which comprises the steps of exposing a metal layer bearing a light-sensitive layer capable of developing a R_d of 1.0 to 2.2 to actinic radiation to produce a potential R_d of 1.0 to 2.2; developing said light-sensitive layer with water-insoluble powder particles using physical force to embed the powder particles in the light-sensitive layer; removing non-embedded powder particles; fusing the water-insoluble powder particles to the metal layer by heating to form a stencil; and etching through the metal layer in the areas unprotected by the fused water-insoluble powder particles.

3,754,913

METHOD FOR PRODUCING A COLORED TRANSPARENT PHOTO-MASK

Satoshi Takeuchi, Kawasaki, and Koniomi Tsuda, Tokyo, both of Japan, assignors to Eiichi Inoue and Canon, Kabushiki Kaisha, both of Tokyo, Japan, part interest to each

Division of Ser. No. 26,875, April 9, 1970, abandoned. This application May 7, 1971, Ser. No. 141,411
Claims priority, application Japan, July 28, 1969, 44/59539
Int. Cl. G03c *5/00*
U.S. Cl. 96—38.3 **2 Claims**

This invention relates to a colored, transparent photo-mask consisted of a transparent base plate and a colored, transparent visible image made of a colored inorganic material. Also this invention relates to a method for producing the colored, transparent photo-mask.

3,754,914

PHOTOSENSITIVE COMPOSITION CONTAINING AN ORGANIC HALOGEN COMPOUND PHOTOACTIVATOR, A COLOR MODIFIER AND A PHOTOREDUCIBLE ORGANIC METAL SALT AND THE USE THEREOF

Eiichi Inoue, and Isamu Shimizu, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 24, 1969, Ser. No. 844,669
Claims priority, application Japan, July 29, 1968, 53461/68
Int. Cl. G03c *5/24, 1/52*
U.S. Cl. 96—48 R **10 Claims**

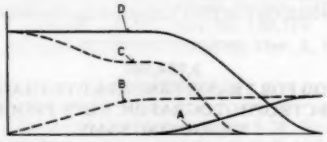
A free radical is effectively produced from an organic halogen compound having at least one halogen atom in a medium comprising an organic metal salt capable of being reduced by applying radiation energy to at least the organic metal salt. This free radical producing method can be used for recording. A photosensitive composition and article of manufacture based on the above-mentioned components irradiated with such radiation energy is also disclosed.

3,754,915

COLOUR PHOTOGRAPHY

Alfred Oetiker, Fribourg, and Max Marthaler, Marly-le-Petit, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed July 7, 1971, Ser. No. 160,558
Claims priority, application Switzerland, July 7, 1970, 10265/70
Int. Cl. G03c *7/00*
U.S. Cl. 96—53 **15 Claims**



A process for producing a photographic colour image by the silver dye-bleach process, comprising exposing image wise and processing to a colour image in the presence of a colour bleaching catalyst a photographic material having on a support at least one diffusion-resistant, bleachable image dye-

containing silver halide emulsion layer and immediately beneath it on the side away from the light source an image dye-free silver halide emulsion layer.

By the present process colour images are obtained wherein the gradation and sensitivity have been favourably influenced.

3,754,916

HEAT DEVELOPABLE DIAZO TYPE SHEETS

John M. Winslow, West St. Paul, and Burt K. Sagawa, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 723,263, April 22, 1968. This application Nov. 29, 1971, Ser. No. 203,011

Int. Cl. G03c *1/60*

U.S. Cl. 96—75 8 Claims

A heat-developable diazo type sheet containing an acid-stabilized diazonium salt in one layer thereof and an acid-neutralizing component in another layer thereof is shown wherein at least half of the basic equivalents of the acid-neutralizing component are provided by at least one weakly basic benzimidazole acid-neutralizer compound.

3,754,917

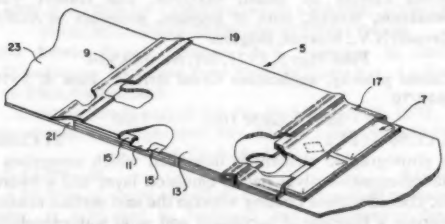
PHOTOGRAPHIC FILM UNIT ASSEMBLAGE

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1970, Ser. No. 33,677

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 C 11 Claims



A photographic film unit assemblage, a cartridge for containing the assemblage, and a camera adapted to receive the cartridge, and to expose and initiate processing of film in the assemblage, are disclosed. The assemblage comprises relatively stiff integral film unit that is supplied before exposure and remains after processing as a single preregistered structure including both photosensitive and image receiving layers. The integral film unit is strippably attached to a relatively flexible carrier by which it may be transported within and out of the camera, and from which it automatically may be separated by pulling the carrier in a direction divergent to the plane defined by the film unit. A container of processing solution and a trap for collecting excess solution cooperate with the film unit during processing but are securely adhered to and remain with the carrier upon stripping of the film unit from the carrier. The carrier, pod, trap, and any other processing waste material then may be advanced into a storage device for later disposal. Preferably, the cartridge and storage device are combined so that the waste material need never be handled by the camera operator either upon introducing the cartridge into the camera or upon disposal of the cartridge after exposure and processing of the film unit.

3,754,918

DYE BLEACHING BATH FOR THE SILVER DYE BLEACHING PROCESS

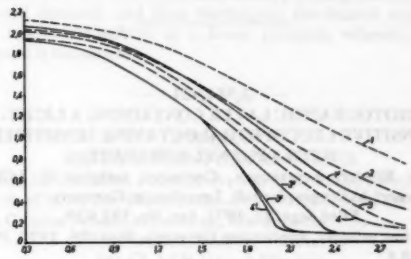
Siegfried Hunig, Wurzburg; Max Heilmann, Cologne, and Peter Bergthaller, Leichlingen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 28, 1971, Ser. No. 166,906

Claims priority, application Germany, July 31, 1970, P 20 38 008.9

Int. Cl. G03c *7/00*

U.S. Cl. 96—53 7 Claims



Color photographic images are produced by the silver dye bleaching process in which the bleaching is accelerated with a bleaching bath containing substituted 1,5-diazanaphthalenes as defined below.

3,754,919

PHOTOGRAPHIC LAYERS WHICH CONTAIN UV-ABSORBERS

Johannes Sobel; Fritz Nittel; Wolfgang Himmelmann, and Willibald Pelz, all of Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 878,220, Nov. 19, 1969, abandoned. This application Dec. 21, 1971, Ser. No. 210,611

Claims priority, application Germany, Dec. 6, 1968, P 18 13 161.8

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R 2 Claims

The light stability of color photographic images is improved by overcoating the image carrying layer with a UV-protective coating which contains a UV-absorbing compound.

The UV-absorbing layer contains as UV-absorbent a 2-phenolbenzo-triazole, the benzo ring of which is substituted with at least 1 alkoxy group.

3,754,920

PHOTOPOLYMERIZABLE ELEMENTS OF LOW OPTICAL DENSITY CONTAINING THICKENERS WITH DISCRETE, ORDERLY ORIENTATION

August Dennis Kuchta, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 762,627, Sept. 25, 1968, abandoned. This application Apr. 30, 1971, Ser. No. 139,280

Int. Cl. G03c *1/68*

U.S. Cl. 96—87 R 10 Claims

This invention relates to a photopolymerizable element for reproducing images. A photopolymerizable composition is coated on a support, dried, and laminated with a cover sheet. The composition contains a particulate micro-crystalline thickener and 10–90 parts of photopolymerizable monomer per 100 parts, by weight, of liquid monomer-thickener composition with an optical density in the actinic region not more than 0.6 and the dry coating thickness is at least 0.05 mil. The support and cover sheet have significantly different degrees of chemical affinity for the unexposed photopolymerizable layer.

The cover sheet has the higher chemical affinity, and is placed preferably on the side opposite the exposure side. The element is imagewise exposed through the support resulting in an increase of adhesion of the exposed photopolymerizable layer to support and cover sheet but with the greatest increase in adhesion being to the cover sheet. The support and cover sheet are delaminated, the polymerized material adhering to the cover sheet, the unpolymerized material remaining on the support. The unpolymerized image may then be transferred to a receptor by first laminating it to the receptor and then applying pressure at room temperature. This photographic element and process are usable in color proofing.

3,754,921
PHOTOGRAPHIC LAYER CONTAINING A LIGHT-SENSITIVE LEUCOPHTHALOCYANINE SENSITIZED WITH A PHENYL BORANATE

Oskar Riester, Leverkusen, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 22, 1971, Ser. No. 182,920

Claims priority, application Germany, Sept. 25, 1970, P 20 47 250.8

Int. Cl. G03c *1/52*

U.S. Cl. 96—90 R **4 Claims**

Photographic dye images are produced by imagewise exposure of a light sensitive layer containing a leucophthalocyanine and a phenylboranate.

3,754,922
LIGHT SENSITIVE TWO-COMPONENT DIAZOTYPE MATERIAL

Shigeaki Yoshida, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 777,494, Nov. 20, 1968, abandoned. This application Aug. 17, 1971, Ser. No. 172,581

Claims priority, application Japan, Nov. 25, 1967, 42/75543

Int. Cl. G03c *1/60*

U.S. Cl. 96—91 R **10 Claims**

A light sensitive two-component diazotype material (sensitive sheet) is provided containing a dicarboxylic acid or an alkyl ester thereof as a developing-accelerator together with a diazotype sensitive composition (i.e., diazo compound and coupler) in the sensitive layer in order to accelerate the rate of development of the diazotype sensitive composition following exposure to light.

3,754,923
PHOTOGRAPHIC SILVER HALIDE MATERIAL CONTAINING DISAZO DYES FOR THE SILVER DYESTUFF BLEACHING PROCESS

Thomas Stauner, Marly-le-Grand; Bernhard Piller, Marly-le-Petit, and Alfred Froehlich, Marly-le-Grand, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

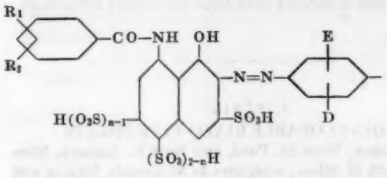
Continuation of Ser. No. 18,311, March 10, 1970, abandoned. This application Dec. 30, 1971, Ser. No. 214,456

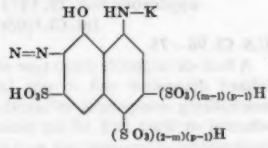
Claims priority, application Switzerland, Mar. 25, 1969, 4478/69

Int. Cl. G03c *1/10*

U.S. Cl. 96—99 **17 Claims**

A photographic light-sensitive material, especially for the silver dyestuff bleaching process is provided, which contains on a support in at least one layer, at least one dyestuff of the formula





in which R_1, R_2, D and E are organic radicals, R_1 and R_2 being in the 3-, 4- or 5-positions to the —CO—group, K is an acyl radical and *m*, *n* and *p* each equals 1 or 2. These dyestuffs are resistant to diffusion, form stable aqueous solutions, can be easily bleached, are fast to light and have favourable spectral properties.

3,754,924
PHOTOGRAPHIC SILVER HALIDE ELEMENT WITH AN ANTISTATIC OUTER LAYER COMPRISING A FLUORINATED SURFACTANT AND A POLYMETHACRYLATE MATTING AGENT

Wilfried Florent De Geest, Berchem, and Hubert Vandenabeele, Wilrijk, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed May 3, 1971, Ser. No. 139,930

Claims priority, application Great Britain, June 4, 1970, 27,048/70

Int. Cl. G03c *1/02, 1/38, 7/00*

U.S. Cl. 96—114.2 **21 Claims**

A photographic element is described which comprises a radiation-sensitive silver halide emulsion layer and a hydrophilic colloid surface coating wherein the said surface coating comprises a fluorinated surfactant and solid water-insoluble discrete particles of a matting agent. The element has improved surface and antistatic properties.

3,754,925
NEW THERMO-GELABLE POLYSACCHARIDE-CONTAINING FOODSTUFFS

Hiroshi Kimura, Kyota; Shigehiko Sato; Tstuo Nakagawa, both of Osaka; Hiromi Nakatani, Kyoto; Akihiko Matsukura, Osaka; Takashi Suzuki, Hyogo; Mitsuko Asai; Tsuneo Kanamaru, both of Osaka; Motoo Shibata, Kumamoto, and Saburo Yamatodani, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 22, 1971, Ser. No. 126,999

Claims priority, application Japan, Mar. 4, 1970, 45/24696; Apr. 7, 1970, 45/29533; Apr. 7, 1970, 45/29534

Int. Cl. A23l *1/04;* C12b *1/00*

U.S. Cl. 99—1 **7 Claims**

A thermo-gelable β-1,3 glucan-type polysaccharide is made by the aerobic cultivation of certain microorganisms. It generally resembles the known thermally gelable β-1,3 glucan known as "curdlan" but possesses definite advantages thereover, particularly when used in the food industry. Also, it may be used advantageously as a substitute for agar in various foods.

3,754,926

METHOD FOR TEXTURIZING PROTEIN MATERIAL

Palmer K. Strommer, Osseo, and Charles I. Beck, Wayzata, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed July 27, 1970, Ser. No. 58,317
Int. Cl. A23j *3/00*
U.S. Cl. 99—17 17 Claims

A method is provided for texturizing protein material by treating the material in the presence of steam at an elevated gaseous pressure and an elevated temperature.

3,754,927

THE MANUFACTURE OF EDIBLE PROTEIN FROM MARINE ANIMALS BY THE USE OF AMMONIA

Richard G. Woodbridge, III, P.O. Box 111, Princeton, N.J.

Filed May 26, 1971, Ser. No. 147,160
Int. Cl. A22c *25/00*; A23j *1/04*
U.S. Cl. 99—18 8 Claims

The process for making edible protein products from marine animals by removing undesirable matters through the use of solvents is greatly improved by carrying out the extraction in the presence of ammonia or ammonium ion. The inclusion of ammonia or ammonium ions facilitates the removal of undesirable odor and color materials and so makes possible the practical production of products with reduced undesirable odor and greater whiteness or may be so utilized as to produce products of levels of odor and color acceptable in the trade but with improved economies of manufacture.

3,754,928

APPLICATION OF COMPRESSIVE AND FRICTIONAL FORCES IN PREPARING DUTCHED COCOA

John Edwin Haney, Oswego, N.Y., assignor to Societe D'Assistance Technique Pour Produits Nestle S.A., La Tour-de-Peilz, Switzerland

Continuation-in-part of Ser. No. 56,647, July 20, 1970, abandoned. This application Nov. 22, 1972, Ser. No. 308,899
Int. Cl. A23q *1/00*
U.S. Cl. 99—26 8 Claims

A mixture of cocoa and alkali, containing a small amount of water, is subjected to frictional and compressive forces whereby its temperature is raised rapidly to 200°– 300°F, the mixture held in this range to carry out dutching. The resulting dutched cocoa has improved miscibility. Other features of the invention appear in the Specification.

3,754,929

MALTING PROCESS

Godfrey Henry Oliver Palmer, Crawley, England, assignor to Brewing Patents Limited, London, England

Filed June 8, 1970, Ser. No. 44,410
Claims priority, application Great Britain, June 11, 1969, 29,706/69
Int. Cl. C12c *1/02*
U.S. Cl. 99—50 3 Claims

In the conversion of barley to malt the distal end of the individual grains is selectively abraded to permit access of exogenous gibberellic acid to the aleurone layer at positions remote from the germ. The abrasion is carried out to such extent as to permit the above result without splitting the husk of an unduly large proportion of the grains. A weight reduction of 0.2% is usually sufficient.

3,754,930

METHOD FOR PRODUCING EXPANDED FOOD STUFFS BY GASEOUS CONVEYING HEATING

Ryozo Toei, Kyoto; Tatsuo Aonuma, Kashiwa; Hiroharu Watanabe, and Toshizumi Yuasa, both of Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Japan

Division of Ser. No. 833,043, June 13, 1969, Pat. No. 3,661,071. This application Dec. 28, 1971, Ser. No. 213,152
Claims priority, application Japan, Oct. 1, 1968, 43/70808
Int. Cl. A23l *1/18*
U.S. Cl. 99—82 3 Claims

A method of continuously producing an expanded foodstuff by entraining a material food stuff in a pressurized heated gas stream in a suspended condition, thereby heating and conveying said material, and then discharging the heated material into a gas atmosphere at a lower pressure, whereby said material is expanded.

3,754,931

HIGH PROTEIN POTATO SNACKS

Reuben H. Waitman, Pearl River; Maria H. Kelly, Tarrytown, both of N.Y., and Frank Hollis, Jr., Hillsdale, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,312
Int. Cl. A23l *1/12*; A23b *7/16*
U.S. Cl. 99—100 P 1 Claim

High protein containing potato snakes are prepared from raw potato slices with adhering coating of proteinaceous material and deep-fat fried. The protein bearing material is tightly adhered to the surfaces of the potato slices prior to and during deep-fat frying with proteinaceous binding material.

3,754,932

PROTEARE AND PECTMARE ADDITIVE TO CITRUS JUICES

Robert A. Baker, and Joseph H. Bruemmer, both of Winter Haven, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 16, 1971, Ser. No. 134,834
Int. Cl. C12b *1/02*; A23l *1/02*
U.S. Cl. 99—106 2 Claims

A method of stabilizing the cloud of citrus juices is disclosed. The method consists of treating the freshly extracted juice with a pectinase containing polygalacturonase activity. The addition of a proteolytic enzyme enhances the breakdown of calcium pectate by polygalacturonase. Spoilage is prevented by including a chemical sterilant in the preparation of the stabilization treatment.

3,754,933

PROCESS FOR MANUFACTURING INSTANT HAMBURGER STEAK

Yuichi Shinkawa, No. 21-8, 3-chome, Isukishima, Tokyo, Japan

Continuation-in-part of Ser. No. 106,289, Jan. 13, 1971, abandoned. This application Dec. 13, 1972, Ser. No. 314,585
Int. Cl. A22c *18/00*
U.S. Cl. 99—108 1 Claim

A process for manufacturing an instant hamburger steak which comprises kneading meats and vegetables with starch, flavoring the kneaded hamburger material with seasoning and spices, shaping the material into a suitable form, immersing the material in hardened oil heated at temperatures of from 60° C. to 100° C. and having a viscosity at that temperature of about 95 to about 53 Redwood seconds for a predetermined period to effectuate a preliminary cooking, taking the material out of the said hardened oil to permit cooling thereby forming a film of fat in solid state around the whole surface of the hamburger steak.

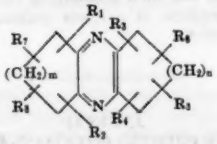
3,754,934

FLAVORING AND FRAGRANCE COMPOSITIONS AND PROCESSES

Alan O. Pittet, Atlantic Highlands, and Ranya Muralidhara, Matawan, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 75,782, Sept. 25, 1970, Pat. No. 3,705,121. This application Nov. 2, 1971, Ser. No. 195,006
Int. Cl. A23l *1/26*; C07d *51/76*
U.S. Cl. 99—140 R 7 Claims

Processes for altering the flavors and aromas of consumable products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one tricyclic pyrazine having the formula



wherein *m* and *n* are each an integer from one to six, and R_1, R_2, R_3, R_4, R_5, R_6, R_7, and R_8, are the same or different and represent hydrogen or alkyl; the products so produced; flavoring and fragrance compositions containing such tricyclic pyrazines; and certain novel pyrazines and processes for their production.

3,754,935

FROZEN PUDDING COMPOSITIONS

Martin Glicksman, Valley Cottage; Bartley N. Wankier, White Plains, and Jerry E. Silverman, Yonkers, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,584
Int. Cl. A23g *5/00*
U.S. Cl. 99—139 2 Claims

A formulation for making frozen puddings, based on raw, unmodified tapioca starch, which can withstand several freeze-thaw cycles including cycles through the +15°F temperature area.

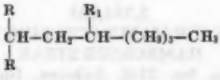
3,754,936

FLAVOR COMPOSITIONS AND PROCESSES

Martin F. Epstein, New City, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,959
Int. Cl. A23f *1/12*; A23l *1/26*
U.S. Cl. 99—140 R 9 Claims

Enhancement of foodstuffs, especially coffee flavored foodstuffs, is achieved by the addition of a small but effective amount of a compound of the formula:



Wherein R is lower alkoxy and R_1 is lower alkoxy or hydroxy.

3,754,937

PLICATIC ACID ESTERS

John Howard, and Terence D. McIntosh, both of c/o Rayonier Incorporated, Olympic Research Division, Shelton, Wash.

Division of Ser. No. 710,775, March 6, 1968, which is a continuation-in-part of Ser. No. 687,092, Dec. 1, 1967. This application Aug. 13, 1972, Ser. No. 171,753
Int. Cl. A23d *5/04*
U.S. Cl. 99—163 6 Claims

New compositions of matter comprising alkyl and aryl esters of plicatic acid, and the use of these esters as antioxidants for fats and oils, are disclosed.

3,754,938

PRESERVATION OF APPLE SLICES WITH A SOLUTION CONSISTING OF ASCORBIC ACID, CALCIUM CHLORIDE AND SODIUM BICARBONATE

James D. Ponting, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 26, 1971, Ser. No. 147,153
Int. Cl. A23b *7/00*, *7/10*
U.S. Cl. 99—154 1 Claim

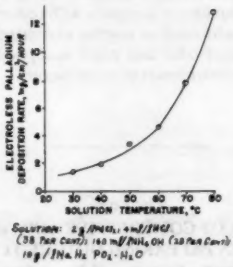
The quality of apple slices is preserved for an extended period of time by the synergistic effect of a treatment solution consisting of ascorbic acid, calcium chloride and sodium bicarbonate. Treatment with said solution eliminates the use of any sulfiting agent in a process for the preservation of apple slices.

3,754,939

ELECTROLESS DEPOSITION OF PALLADIUM ALLOYS

Fred Pearlstein, and Robert F. Weightman, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 74,038, Sept. 21, 1970, abandoned. This application May 23, 1972, Ser. No. 256,049
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 8 Claims



SOLUTION: 2 g/PdCl₂, 4 ml/HCl (38 per cent), 160 ml/NH₄OH (28 per cent), 27 g/NH₄Cl, 10 g/NaH₂PO₂·H₂O

A plating solution for providing an electroless deposit of palladium alloys wherein palladium predominates, with a minor amount of nickel, cobalt, or zinc. The electroless palladium alloys contain up to about 6% nickel, or 10% cobalt, or 36% zinc, each with phosphorus. Preferred bath compositions comprise 29.6 g/l $NiSO_4 \cdot 6H_2O$, or 29.6 g/l $CoSO_4 \cdot 6H_2O$, or 36.0 g/l $ZnSO_4 \cdot 8H_2O$, with:

$PdCl_2$—2 g/l
HCl (38%)—4 ml/l
NH_4OH (28%)—160 ml/l
NH_4Cl—27 g/l
$NaH_2PO_2 \cdot H_2O$—10 g/l

3,754,940

ELECTROLESS PLATING SOLUTIONS CONTAINING SULFAMIC ACID AND SALTS THEREOF

Leon A. Kadison, and Eileen Maguire, both of Pasadena, Calif., assignors to Crown City Plating Company, El Monte, Calif.

Continuation-in-part of Ser. No. 118,480, Feb. 24, 1971, abandoned. This application Sept. 6, 1972, Ser. No. 286,837
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 5 Claims

Sulfamic acid and its salts are used to stabilize alkaline electroless copper plating solutions against decomposition. When employed in the second bath of a two-bath electroless plating system, the presence of sulfamic acid and its salts permits rapid deposition, over a broad range of concentrations, of copper onto an initial copper or nickel plate, while preventing deposition of copper onto a noble metal catalyzed surface. The stabilizers also serve to supplement single-bath electroless copper plating systems.

3,754,941

REMOVAL OF METALLIC STAINS FROM PORCELAIN SURFACES

Richard L. Burke, San Diego, Calif., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 668,668, Sept. 18, 1967. This application Jan. 4, 1971, Ser. No. 103,832

Int. Cl. C09g *1/02*

U.S. Cl. 106—3 **3 Claims**

This disclosure relates to cleansing compositions having particular utility as a metallic stain remover from hard surfaces such as porcelain, comprising an oxidant capable of oxidizing the metal in a practical time such as the metallic ions ferric, stannous, cupric and mercuric and non-metallic oxidants such as hydrogen peroxide, a flouride solubilizer and a halide promotor, said composition having a pH of 0.5 – 5. Additives such as detergents, perfumes, fillers, colorants, etc. may be included provided they do not adversely affect the stain removing properties of the composition. Although aluminum pot marks are most often encountered in normal household cleaning, said cleansers are effective against other metallic stains such as iron, tin, magnesium, etc.

3,754,942

RUST PREVENTIVE COATING COMPOSITION

Ebrahim Moradian, 102 Windsor East, Thibodaux, La.

Continuation-in-part of Ser. No. 113,087, Feb. 5, 1971, abandoned. This application June 15, 1972, Ser. No. 263,292

Int. Cl. C09d *5/08*

U.S. Cl. 106—14 **7 Claims**

A protective coating for metals is provided which is both resistant to corrosion and flexible. The protective coating comprises, by weight, about 10–60 percent of a high melting point micro crystalline wax, 2.5–25% of a mixture of paraffinic and naphthenic oils, 0.01–15% of an alkali metal sulfonate, 16–50 percent of an asphaltite, 2–25% of a drying oil, 2–5 percent of a high molecular weight naphthenic acid having an average molecular weight in the range from about 290 to 420, and 3–60 percent of a solvent. Metallic particles, such as aluminum paste and coloring agents can also be employed.

3,754,943

DISPOSABLE PATTERN, COMPOSITION FOR MAKING SAME AND METHOD OF INVESTMENT CASTING

Paul Solomon, Highland Park, Ill., assignor to Yates Manufacturing Co., Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,374

Int. Cl. C08h *9/06*

U.S. Cl. 106—38.8 **8 Claims**

A disposable pattern material for investment casting processes incorporating cyanuric acid and a thermoplastic material; and an investment casting process utilizing a disposable pattern material incorporating cyanuric acid.

3,754,944

LIQUID BOTTOM PLATE DRESSINGS

Trevor Hardy, Nechells, England, assignor to Foseco International Limited, Birmingham, England

Continuation-in-part of Ser. No. 29,642, April 17, 1970, abandoned. This application July 22, 1971, Ser. No. 165,317

Claims priority, application Great Britain, Dec. 8, 1969, 58,922/69; Dec. 8, 1969, 58,923/69

Int. Cl. B28b *7/36*

U.S. Cl. 106—38.27 **7 Claims**

Liquid bottom plate dressings consist of water, a water soluble silicate and an MgO source, the proportion of MgO to silicate being sufficient to convert all the silicate to forsterite ($2MgO:SiO_2$), and the water being sufficient to dissolve all the silicate.

3,754,945

REFRACTORY LAMINATE BASED ON NEGATIVE SOLS OR SILICATES AND POLYCATIONIC ORGANIC COMPOUNDS

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 49,908, June 25, 1970, abandoned. This application June 1, 1971, Ser. No. 148,958

Int. Cl. C04b *35/14*

U.S. Cl. 106—38.35 **13 Claims**

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure in a bath comprising a sol of negatively charged colloidal particles of an inorganic substance and/or a solution of an alkaline ionic silicate to form a coating on the surface, contacting the coated surface with a polycationic organic setting agent to firmly set the negative sol or silicate solution. This procedure is repeated until a laminate of the desired thickness is built up on the surface. In order to increase the rate of laminate build-up particulate refractory material can be included in the bath and/or the coated surface can be stuccoed between dips. Interaction between the negatively charged colloidal particles or silicate and the polycationic organic setting agent results in the polymerization of the colloid or silicate and aggregation of particles and thereby the immobilization of the coatings. This technique makes it possible to successively apply and set coatings to build ceramic laminates in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost wax" technnique.

3,754,946

REFRACTORY LAMINATE BASED ON NEGATIVE SOLS OR SILICATES AND NON-POLYMERIC ORGANIC CATIONIC NITROGEN-CONTAINING COMPOUNDS

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 1, 1971, Ser. No. 148,964

Int. Cl. C04b *35/14*

U.S. Cl. 106—38.35 **14 Claims**

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure in a bath comprising a sol of negatively charged colloidal particles of an inorganic substance and/or a solution of an alkaline ionic silicate to form a coating on the surface, contacting the coated surface with a non-polymeric nitrogen-containing cationic organic setting agent to firmly set the negative sol or silicate solution. This procedure is repeated until a laminate of the desired thickness is built up on the surface. In order to increase the rate of laminate build-up particulate refractory material can be included in the bath and/or the coated surface can be stuccoed between dips. Interaction between the negatively charged colloidal particles or silicate and the cationic organic setting agent results in the polymerization of the colloid or silicate and thereby the immobilization of the coatings. This technique makes it possible to successively apply and set coatings to built refractory laminates in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,754,947

LITHIUM ALUMINO SILICATE COMPOSITION HAVING LOW IRON CONTENT

George M. Burkert, Morganton; H. Edward Uhland, and Ricardo O. Bach, both of Gastonia, all of N.C., assignors to First National City Bank, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,715
Int. Cl. C04b 33/00; C01b 33/26, 33/32
U.S. Cl. 106—39 R 12 Claims

Lithium alumino silicate compositions having a low iron content, suitable for use in the glass and ceramic industries, are prepared by calcining a mixture of (a) a lithium alumino silicate-containing ore containing a high content of iron, such as spodumene, with (b) predetermined proportions of lithium carbonate or lithium hydroxide. Carbon dioxide is released and driven off where lithium carbonate is employed and water is released and driven off where lithium hydroxide is employed. The finished compositions have low contents of iron with weight ratios of Li_2O to iron (calculated as Fe_2O_3) of the order of at least 50.

3,754,948

REFRACTORY COMPOSITIONS

Malcolm Donald Ash, Wirral, England, assignor to Morganite Ceramic Fibres Limited, Wirral, England

Filed Aug. 19, 1970, Ser. No. 65,086
Claims priority, application Great Britain, Aug. 21, 1969, 41,811/69
Int. Cl. C04b 35/16
U.S. Cl. 106—55 3 Claims

Refractory insulating compositions which comprise mineral wool and ceramic fibre in admixture. Up to 60 percent by weight of the composition preferably can be mineral wool for low temperature applications; at higher temperatures a higher proportion of ceramic fibre is needed. The compositions may be mixed with carriers, binders and/or stiffeners.

3,754,949

PROTECTIVE COATING FOR MATERIALS EXPOSED TO MOLTEN ALUMINUM AND ITS ALLOYS

Elton S. Gamble, Trumbull, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 12, 1971, Ser. No. 188,611
Int. Cl. C04b 35/02, 35/54
U.S. Cl. 106—56 8 Claims

A composition which may be used as a coating on articles to be placed in molten aluminum comprising a refractory material consisting essentially of tri-calcium phosphate, aluminum oxide powder, magnesium orthoborate, Kaolin clay and calcined Kaolin clay. The composition may optimally contain graphite to increase the ease of application of the composition to the articles upon the addition of water to form an aqueous suspension.

3,754,950

THERMAL TREATMENT OF ELECTROMELTED REFRACTORY MATERIALS

Giacomo Cevales, Venezia, Italy, assignor to Refradige S. p. A., Milano, Italy

Filed July 9, 1971, Ser. No. 161,268
Claims priority, application Italy, July 13, 1970, 27345 A/70
Int. Cl. C04b 35/18, 35/48
U.S. Cl. 106—57 4 Claims

A process is disclosed for imparting an increased corrosion resistance to electromelted refractory materials of the AZS type (alumina, zirconia, silica) comprising crystalline phases and one vitreous phase, the process being characterized in that the refractory material is subjected to a controlled thermal treatment at temperatures between 1300°C and 1600°C. The starting material has a chemical composition, expressed in oxides, within the following weight ranges: Al_2O_3 = 45–65%, ZrO_2 = 10–40%, SiO_2 = 12–20%, Na_2O = 0.8–1.4%, corresponding to the following weight ranges of the individual phases: Corundum = 30–60%, Baddeleyite = 10–40%, Mullite = 0–40%, vitreous phase = 15–25%.

3,754,951

PERICLASE REFRACTORY GRAIN

Richard L. Coatney, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed July 26, 1971, Ser. No. 165,919
Int. Cl. C04l 35/04
U.S. Cl. 106—58 10 Claims

A high purity periclase (MgO) refractory grain of exceptionally high strength results when the subsidiary constituents of the grain are controlled so that in addition to lime (CaO) and silica (SiO_2) compounds, particularly dicalcium silicate, there are present brownmillerite and/or dicalcium ferrite, to the exclusion of other iron and aluminum compounds.

3,754,952

METHOD OF OBTAINING CHEMCIAL RESISTANT CONCRETE

Vsevolod Petrovich Kirilishin, spusk Zhanny Lyaburb, 6, kv. 4, Odessa, and Nikolai Ivanovich Khitarov, ulitsa Malaya Yakimanka, 3, kv. 11, Moscow, both of U.S.S.R.

Filed July 15, 1970, Ser. No. 55,232
Int. Cl. C04b 35/14, 35/16
U.S. Cl. 106—84 3 Claims

Disclosed herein is a method of obtaining chemical resistant concrete, the essence of the method consisting in that use is made as starting components of the concrete binder, of high-silica alkaline glass with a silica modulus in excess of 6, and quartz sand comminuted into particles with a specific surface of at least 1,000 cm^2gr.

3,754,953

AQUEOUS HYDRAULIC CEMENT COMPOSITION HAVING IMPROVED RETARDATION TO SET AND USE THEREOF IN HIGH TEMPERATURE ENVIRONMENTS

Robert C. Martin, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 42,569, June 1, 1970, Pat. No. 3,662,830. This application Dec. 23, 1971, Ser. No. 211,662
Int. Cl. C04b 7/02
U.S. Cl. 106—90 2 Claims

In a method of cementing at relatively high ambient temperatures employing an aqueous hydraulic cement slurry, the improvement comprising admixing therewith an effective amount of both (1) a salt of lignosulfonic acid and (2) boric acid or a borate whereby a synergistic retarding effect on the setting rate of the slurry is attained without any accompanying adverse effects.

3,754,954

ALTERING THE PROPERTIES OF CONCRETE BY ALTERING THE QUALITY OR GEOMETRY OF THE INTERGRANULAR CONTACT OF FILLER MATERIALS

Lester H. Gabriel, Sacramento, and Wilfred Willis, San Francisco, both of Calif., assignors to Gabriel-Willis Associates, San Francisco, Calif.

Division of Ser. No. 886,556, Dec. 19, 1969, Continuation-in-part of Ser. No. 792,370, Jan. 21, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,490
Int. Cl. C04b 7/02
U.S. Cl. 106—97 11 Claims

A method for preparing and molding concrete so as to impart great strength per weight, minimize or otherwise alter shrinkage and creep, reduce porosity and give a superior as-

molded surface. Aggregates are dry mixed with cement (or cement-filler mixture) in a preparation such that the bulk volume of dry cement (or cement-filler mixture) is approximately equal to the volume of void space which the aggregates would have if the cement were not present. A mold is filled with the resultant dry mixture, the ingredients of which are so proportioned that a particular geometry of particle contact is achieved upon compaction. The quality and geometry of this contact (coupled with the properties of the particular filler materials) determine the properties of the finished product. Then, with no disturbance to this compacted preordered structure of particle contact, water is injected and distributed by a self-metering process dependent upon capillary action which itself is dependent upon the geometry of particle contact. With the assistance or opposition of gravitational forces and with or without increased pressure differential, this water is introduced in a manner such that the water sweeps the air from the remaining voids and ejects that air into the atmosphere. The resultant wet, compact mixture is then cured in the mold or forms.

3,754,955

PHTHALOCYANINES

Jean Andre Paul Kienzle, 1 rue du Plessis; Michel Ernest Antoine Huille, 7 rue Ribot, both of Creil, and Louis Antoine Cabut, 40 rue Pierre Semand, Nogent sur Oise, all of France

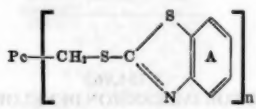
Filed Nov. 22, 1971, Ser. No. 201,202

Claims priority, application France, Nov. 20, 1970, 7041758

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **6 Claims**

Phthalocyanine compounds of the formula:



(I)

in which Pc is a phthalocyanine residue, the benzene nucleus A is unsubstituted or substituted by at least one alkyl group having up to 4 carbon atoms and *n* represents a whole number from 1 to 8; phthalocyanine pigment mixtures containing such a compound; process for the stabilisation of phthalocyanine pigments which comprises incorporating therein at least one compound of formula (I); and paints, lacquers, enamels, inks and plastic materials coloured by means of phthalocyanine pigment mixture containing a compound formula (I).

3,754,956

TREATMENT OF OXIDE PIGMENTS

George Geoffrey Durrant; Michael Hugh Gamon, and Nigel John House, all of Grimsby, England, assignors to Laporte Industries Limited, London, England

Filed Mar. 2, 1971, Ser. No. 120,373

Claims priority, application Great Britain, Mar. 13, 1970, 12,300/70

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **15 Claims**

The wetting and dispersion characteristics of titania pigments in plastic materials is improved by treating the pigment with from 0.1-60.0 percent by weight of a polylactone having terminal hydroxy groups, the polylactone being in liquid form or in solution.

3,754,957

ENHANCEMENT OF THE SURFACE CHARACTERISTICS OF CARBON FIBERS

Melvin L. Druin, West Orange; George R. Ferment, Dover, and Velliyur N. P. Rao, North Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,454

Int. Cl. C08h *17/08, 17/10*

U.S. Cl. 106—307 **15 Claims**

An improved process is provided for modifying the suface characteristics of a carbonaceous fibrous material (either amorphous carbon or graphitic carbon) and to thereby facilitate enhanced adhesion between the fibrous material and a matrix material. The fibrous material is continuously passed at a relatively rapid rate through a heating zone containing a minor quantity of gaseous molecular oxygen under conditions found suitable for bringing about the desired surface modification. Composite articles of enhanced interlaminar shear strength may be formed by incorporating the fibers modified in accordance with the present process in a resinous matrix material.

3,754,958

AMMONIUM SALT TREATED SULFONATED PHTHALOCYANINES

Vito Albert Giambalvo, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 8, 1972, Ser. No. 250,892

Int. Cl. C08h *17/14*

U.S. Cl. 106—308 N **12 Claims**

A copper phthalocyanine pigment having improved body in a wide variety of vehicle formulations is prepared by treating a partially sulfonated copper phthalocyanine, which contains red and/or green shade unsulfonated copper phthalocyanine together with the sulfonated copper phthalocyanine, with a salt of a primary, secondary, or tertiary alkyl, cycloalkyl, aralkyl, cyclized alkyl or cycloalkyl amine or quaternary ammonium compound having a total of about four to about 18 carbon atoms attached to each nitrogen, in an aqueous medium at a temperature between about 20°C. and about 100°C., the pH of the treated pigment being between about 4 and about 7.

3,754,959

TRANSFER MEDIUM

Gary J. Peters, Dayton, and Stanley R. Hermann, Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 31, 1971, Ser. No. 176,739

Int. Cl. B41m *3/12*; H01f *10/02*

U.S. Cl. 117—3.1 **2 Claims**

Sensible coatings comprised of a colored sensible material in a binder of aminotriazine resin and a polymeric material are disclosed. The coatings can be placed on a transfer base such as polyethylene terephthalate and transferred to enpaneled plastic card bases. These machine sensible cards are resistant to scratching and other surface damage. The sensible coating is easily transferred in one step and permanently heat sealed in a second step.

3,754,960

HIGHLY PLASTICIZED QUIVERY PLASTIC MATERIAL WITH REPLENISHING FRICTION SURFACE AND METHOD OF PRODUCING THE SAME

Maurice W. Hart, Jr., 601 W. 27th St., Coral Gables, Fla.

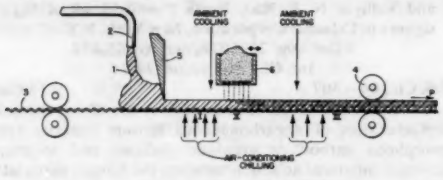
Filed July 1, 1971, Ser. No. 158,958

Int. Cl. B44c *1/08*

U.S. Cl. 117—9 **4 Claims**

This disclosure relates to a novel highly plasticized quivery plastic member as of polyvinyl chloride, containing friction

particles, such as sand or the like, mechanically temporarily trapped, but not wettingly secured, within a gradually cured



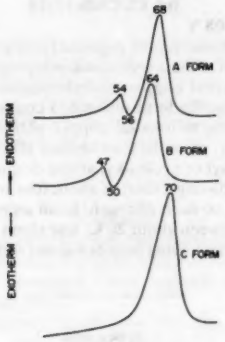
surface of the member, with the particles being adapted, upon abrasion of the member, to dislodge out of said surface in a replenishing manner.

3,754,961

METHOD OF PREVENTING THE CAKING OF HARDENED OIL COATED PARTICLES

Ryuzo Ueno, Nishinomiya; Tetsuya Miyazaki, Itami, and Shigeo Inamine, Nishinomiya, all of Japan, assignors to Ueno Fine Chemical Industries, Ltd., Osaka, Japan

Filed July 21, 1971, Ser. No. 164,717
Claims priority, application Japan, July 24, 1970, 45/64294
Int. Cl. B44c *1/06*; B44d *5/08*
U.S. Cl. 117—16 **6 Claims**



A method of preventing the caking of hardened oil coated particles which comprises allowing particles consisting of a core material coated with a coating agent predominantly of a hardened oil having a melting point of 45°–85°C., to stand for at least 20 hours at a temperature exceeding 25°C. but lower than the softening point of the hardened oil to thereby stabilize the crystal structure of the hardened oil and thereafter adding to the coated particles a caking inhibitor, in an amount of 0.3 – 5 percent by weight based on weight of the coated particles.

3,754,962

DEVELOPMENT OF ELECTROSTATIC IMAGES

Richard A. Berlier, and Robert T. Ritchie, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,229
Int. Cl. G03g *13/08*, *15/08*
U.S. Cl. 117—17.5 **5 Claims**

Improved development of electrostatic images having features such as broad solid fill, continuous tone or low contrast is obtained by a two step process involving overdevelopment followed by selective cleaning. The overdevelopment is accomplished through the use of a development electrode that is either grounded or is biased to a polarity opposite to the polarity of the electrostatic image so as to enhance the deposition of toner onto the electrostatic image by creating an erected, uni-directional development field. This development field places toner uniformly on solid areas, proportionally on gray areas, in large amounts on low contrast image areas and also generally on background areas. The thus overdeveloped

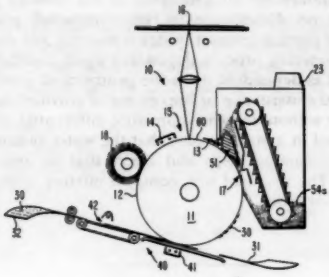


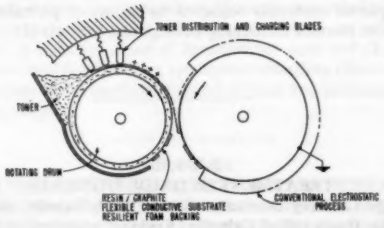
image is removed from the development field thereby establishing a bi-directional imaging clearing field that is directed toward desired image areas and away from background areas. A selective cleaning system such as a cascade of electrostatically attractive particles, is passed over the overdeveloped image in the presence of the image clearing field to selectively remove toner from background areas without equally removing toner from the image areas.

3,754,963

SURFACE FOR IMPRESSION DEVELOPMENT IN ELECTROPHOTOGRAPHY

Leo S. Chang, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,980
Int. Cl. G03g *13/08*
U.S. Cl. 117—17.5 **3 Claims**


TONER DISTRIBUTION AND CHARGING BLADES
TONER
ROTATING DRUM
RESIN / GRAPHITE FLEXIBLE CONDUCTIVE SUBSTRATE RESILIENT FOAM BACKING
CONVENTIONAL ELECTROSTATIC PROCESS

In an impression development process for electrophotography, toner particles and an electrostatic image are brought into contact; the toner particles are transported by means of a developer surface which is resilient, electrically conductive, rough, and triboelectrically remote from the toner; mutually interrelated moving means are used to move said developer surface and said latent electrostatic image into contact at zero relative peripheral speed.

3,754,964
PROCESS FOR THE CONTINUOUS OPTICAL BRIGHTENING OF ACYLATED CELLULOSE FIBRE MATERIAL

Marcel Seuret, Melbourne, Australia, and Willi Leutenegger, Bottmingen/Basel-land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y., by said Leutenegger

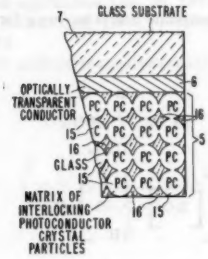
Continuation-in-part of Ser. No. 871,561, Nov. 5, 1969, abandoned, which is a continuation of Ser. No. 573,184, Aug. 18, 1966, abandoned. This application Feb. 26, 1971, Ser. No. 119,044
Int. Cl. C09k *3/00*
U.S. Cl. 117—33.5 T 16 Claims

A process for the continuous optical brightening of incompletely and completely acylated cellulose fiber material comprising impreganting the material with a solution of at least on optical brightener in a non-aqueous solution of a water-soluble organic solvent which solution also contains at least 80 percent by volume of a water-insoluble organic solvent.

3,754,965
METHOD FOR MAKING AN ELECTROPHOTOGRAPHIC PLATE

John B. Mooney, Saratoga, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 5, 1971, Ser. No. 131,021
Int. Cl. B44d *1/46*; G03g *5/00, 7/00*
U.S. Cl. 117—34 6 Claims

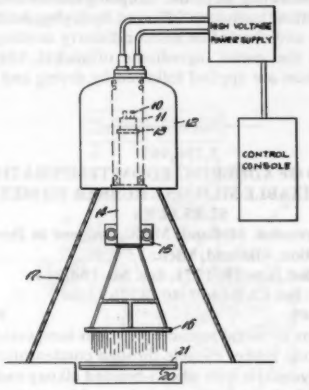


In an electrophotographic camera, a photon image to be recorded is focused through an optically transparent substrate and transparent electrode onto the back surface of a photoconductive layer. The charge-retentive surface of an electrographic recording paper is disposed adjacent the photoconductive layer and the conductive backing of the paper is connected to an electrode for impressing a charge transfer potential across the photoconductor layer and the charge-retentive layer of the paper. When the potential is impressed across the photoconductor, electrons liberated in the photoconductor by the photon image to be recorded are transferred to the charge-retentive surface of the recording paper to form a charge image of the object to be recorded. The charge image is subsequently developed by applying charged toner particles to the image for developing same. The photoconductive layer comprises a substantially continuous layer of an interlocked matrix of crystals of active photoconductive material coated and bound together with a lead sealing glass interstitially disposed of the interlocking crystal matrix. The resultant photoconductive layer has improved strength and resistance to abasion while producing acceptable photographic images. The photoconductive layer is produced by heating a stratum including particles of lead sealing glass together with particles of preactivated photoconductive material in the presence of a molten solvent and proportions of one or more activators.

3,754,966
TRANSFER ELEMENTS AND PROCESSES

Douglas A. Newman, Glen Cove; Alfred M. Vogel, Malverne, and Allan T. Schlotzhauer, Glen Cove, all of N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 692,113, Dec. 20, 1967, abandoned. This application Oct. 22, 1970, Ser. No. 82,969
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.1 8 Claims



Process for making novel pressure-sensitive carbons and ribbons having a resinous binder material comprising preparing a liquid composition containing a liquid polymerizable polyvinyl ester of a polyhydric alcohol, a non-volatile, non-drying oleaginous material and an imaging material, coating the liquid composition as a thin layer on a support and subjecting the thin layer to a uniform application of high intensity electron radiation for a brief period of time to cause the resin precursor to polymerize and form a thin, dry, pressure-sensitive resinous ink layer.

3,754,967
METHOD OF ADHERING SILICONE RUBBER TO METAL SURFACES USING SALTS

Thomas W. Greenlee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 18, 1971, Ser. No. 154,645
Int. Cl. B44d *1/40*; B32b *15/08*
U.S. Cl. 117—49 10 Claims

The adhesion to metal surfaces of room temperature vulcanizable silicone rubber curable through condensation of silicon-bonded hydroxyls with silicon-bonded alkoxy radicals is improved by contacting the metal surface with aqueous solutions of sodium ammonium or potassium salts of chlorides, iodides, bromides, bicarbonates, sulfates, dihydrogenphosphates, monohydrogenphosphates, tetraborates, perchlorates, nitrates or nitrites, rinsing the surface, drying, thereafter applying the room temperature vulcanizable silicone rubber to the treated surface and allowing it to cure.

3,754,968
PROCESS FOR PRODUCING ERROSION AND WEAR RESISTANT METAL COMPOSITES

Barry David Reznik, Brooklyn, N.Y., assignor to DeWiant Corporation, Detroit, Mich.

Division of Ser. No. 828,702, May 28, 1969. This application Sept. 10, 1971, Ser. No. 179,538
Int. Cl. B44d *1/14*; C23c *17/00*
U.S. Cl. 117—46 CA 4 Claims

Erosion and wear resistant metal composites are disclosed that comprise a metal alloy substrate and a coating composi-

tion bonded to said substrate; the coating composition consisting essentially of nickel, chromium, boron, silicon and titanium carbide in the following percentages by weight of the coating composition:

nickel	14% to 80%
chromium	0.5% to 10%
boron	0.2% to 5%
silicon	0.3% to 8%
titanium carbide	6% to 82%

A process is disclosed for producing the composites wherein a first coating containing all of the foregoing metals are applied via a slurry coating technique followed by drying, heating and pressing steps and thereafter a second slurry coating step is used wherein the metal ingredients of nickel, chromium, boron and silicon are applied followed by drying and heating steps.

3,754,969

METHOD OF ADHERING ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER TO METAL SURFACES

Thomas W. Greenlee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 18, 1971, Ser. No. 154,644
Int. Cl. B44d *1/40*; B32b *15/08*
U.S. Cl. 117—49 **9 Claims**

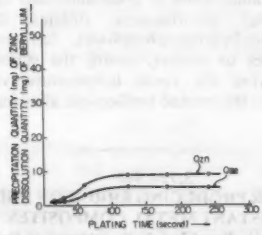
The adhesion to metal surfaces of room temperature vulcanizable silicone rubber curable through condensation of silicon-bonded hydroxyls with silicon-bonded alkoxy radicals or silicon-bonded hydrogen atoms is improved by contacting the metal surface with acetic acid, formic acid, propionic acid, butyric acid, benzoic acid, toluic acid, metal salts thereof and ammonium salts thereof, removing any excess acid or salt from the surface along with any extraneous materials formed during the contacting, drying the surface and thereafter applying the room temperature vulcanizable silicone rubber to the treated surface and allowing it to cure.

3,754,970

METHOD OF PLATING BERYLLIUM ARTICLE WITH ZINC

Junichiro Kawada, Tokyo, and Nobuo Sato, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed July 2, 1971, Ser. No. 159,408
Claims priority, application Japan, Oct. 29, 1970, 45/094656
Int. Cl. C23c *3/00*
U.S. Cl. 117—50 **11 Claims**



Beryllium article is chemically plated with metallic zinc with a high fixedness and uniformity by treating same with an aqueous acid solution containing zinc cation (Zn^{++}) and fluorine anion (F^-) and having a zinc content of 0.35 to 14 percent by weight.

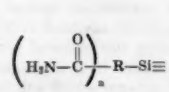
3,754,971

UREA SILICON PRODUCT AND USES THEREOF

Enrico J. Pepe, and James G. Marsden, both of Amawalk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 759,524, Sept. 12, 1968, Pat. No. 3,671,562, Continuation-in-part of Ser. No. 729,895, May 17, 1968, abandoned. This application Apr. 14, 1972, Ser. No. 244,280
Int. Cl. B32b *17/10, 27/06*; C07f *7/02*
U.S. Cl. 117—72 **3 Claims**

This invention relates to urea containing silicon compounds of the formula



and the uses thereof, particularly as coupling agents on glass and to the similar use of substituted urea containing silicon compounds.

3,754,972

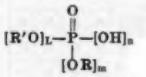
PHOSPHATE ESTERS AND THEIR USE AS ADHESIVE PROMOTERS

Robert de Majistre, Natrona Heights; Gordon M. Parker, Lower Burrell, and Robert Sirkoch, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

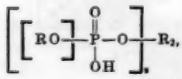
Filed Mar. 29, 1971, Ser. No. 129,113
Int. Cl. B44d *1/50*
U.S. Cl. 117—72 **10 Claims**

A novel class of phosphate esters having a formula comprising either:

(A)

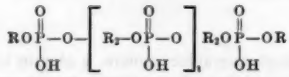


(B)

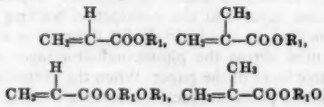


or

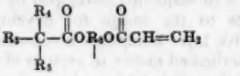
(C)



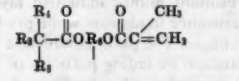
wherein R is selected from the group consisting of



an unsaturated hydrocarbon radical,



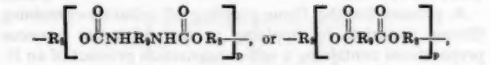
or



wherein R_1 is an alkylene radical, R_3 is an alkyl radical or hydrogen, R_4 is an alkyl radical or hydrogen, R_5 is an

alkyl radical or hydrogen, and R_6 is a trivalent organic moiety, and R′ is selected from the group consisting of an alkyl radical and

wherein R_7 is R_1OR_1, or R_1, and R_2 has the formula:



wherein R_8 is $-R_1[OR_1+_y$, $R_9[OR_1+_b$, or $R_9(COOR_1+_b$, R_9 is alkylene, arylene or aralkylene, *p* is from 0 to 30, *y* is from 0 to 20, *n* is either 1 or 2, *L is either 0 or 1, and* $n+m+L=3$, *b* is 3 to 5, and *z* is from 2 to 5, and *t* is from 0 to 5; is useful as an adhesion promoter for substrates coated with actinic light-sensitive coatings and ionizing irradiation-sensitive coatings.

3,754,973

AZIDOFORMATE-ISOCYANATE COMPOUNDS AND THEIR USES

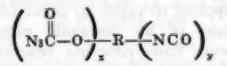
Harold M. Spurlin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 860,034, Sept. 22, 1969, Pat. No. 3,676,466. This application Aug. 26, 1971, Ser. No. 175,410

Int. Cl. B32b *15/08;* **C07c** *117/00;* **B32b** *17/10*

U.S. Cl. 117—72 **5 Claims**

Disclosed are azidoformate-isocyanate compounds of the formula



where R is a polyvalent organic radical and *x* and *y* are integers from 1 to 100. The use of said azidoformate-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has bene modified with an azidoformate-isocyanate compound.

3,754,974

METHOD AND AGENT FOR PREVENTING COATING FILMS FROM PEELING

Nobuyoshi Hirota, Nagasaki-shi, Nagasaki-ken, Japan

Continuation-in-part of Ser. No. 876,582, Nov. 12, 1969, abandoned. This application Dec. 22, 1971, Ser. No. 211,060

Int. Cl. B44d *1/14, 1/34*

U.S. Cl. 117—75 **15 Claims**

An anti-peeling agent containing a mixture of 1. a substance whose molecule is partly composed by a functional atomic group reactive to the epoxy and the hydroxyl group or both, in film forming molecules, and which forms a chemical bond between two identical or different coating films and 2. an organic solvent which is capable of permeating rapidly through the surface of a film to be coated in completely cured condition and to activate it. The substance (1) is selected from (a) organosilane compounds containing in one molecule more than two different kinds of functional groups and (b) derivative compounds prepared by the reaction of an alkoxide compound or organic complex compound of titanium or aluminum with an epoxy resin which is cross-linked therewith. The invention also relates to a method for preventing subsequently applied overcoating films from peeling by application of the anti-peeling agent to coated iron and steel surfaces.

3,754,975

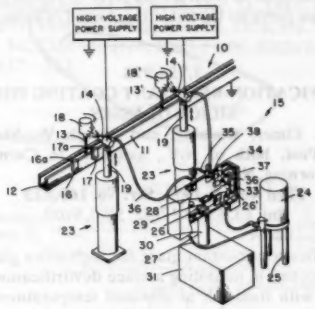
DEPOSITION MATERIALS AND METHOD

Lester L. Spiller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Continuation of Ser. No. 797,329, Jan. 13, 1969, abandoned. This application June 28, 1971, Ser. No. 157,745

Int. Cl. B05b *5/00*

U.S. Cl. 117—93.4 R **17 Claims**



A method of depositing a metallic material onto a non-metallic substrate by depositing electrostatically charged particles of an admixture or solution including a thermally decomposable metal salt and a combustion retarding solvent to the non-metallic substrate. The non-metallic substrate is heated to an elevated temperature prior to the transference of the admixture to the substrate. The combustion retarding constituent of the admixture tends to partially decompose and vaporize at the elevated temperature of the non-metallic substrate and the metal salt tends to thermally decompose depositing a metallic material onto the non-metallic substrate. If the substrate is heated to a sufficiently high temperature, the metallic material tends to diffuse into a non-metallic substrate such as glass to thereby alter the color of the substrate.

The solution to be formed into electrostatically charged particles contains a metal salt and a combustion retarding solvent.

3,754,976

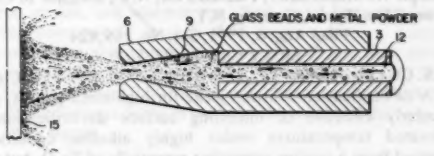
PEEN PLATING

Alfred J. Babecki, Oxon Hill, and Carl L. Haehner, Laurel, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 6, 1971, Ser. No. 205,047

Int. Cl. B44d *1/02*

U.S. Cl. 117—105 **10 Claims**



A process for metal plating which comprises spraying a mixture of metallic powder and small peening particles at high velocity against a surface, said velocity being sufficient to impact and bond said metallic powder onto said surface.

In the case of metal surfaces, the process has as one of its advantages providing mechanical working (hardening) of the surface simultaneously with the metal plating.

3,754,977

METHOD OF SPRAYING GLASS FIBER AND RESINS ONTO SUBSTRATE WHICH ELIMINATES NECESSITY OF ROLLING

Jay A. Lankheet, Holland, Mich., assignor to Glamour Pools by Aztec, Wyckoff, N.J.

Filed Oct. 16, 1970, Ser. No. 81,573
Int. Cl. B44d *1/08, 1/26, 1/22*
U.S. Cl. 117—105.5 **9 Claims**

An inert, non-absorbent dust is mixed with polyester resin in sufficient quantities that when the mixture is sprayed with fiber glass particles to form a rigid layer of reinforced plastic, the fiber glass particles lay flat without need of rolling.

3,754,978

DEVITRIFICATION-RESISTANT COATING FOR HIGH-SILICA GLASSES

Thomas H. Elmer, Corning, and Joseph W. Malmendier, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,823
Int. Cl. C03c *17/02, 5/00, 9/00*
U.S. Cl. 117—124 A **3 Claims**

A devitrification-resistant glaze for high-silica glasses, particularly effective in inhibiting surface devitrification induced by contact with food-ash at elevated temperatures, formed from a coating consisting essentially, in weight percent, of about 25–85 percent Al_2O_3 and 15–75 percent ZrO_2, and optionally containing up to about 10 percent Ta_2O_5. The coating is preferably applied in the form of an aqueous slurry which is dried and fired to produce a vitreous glaze.

3,754,979

LINE RESOLUTION IN SCREEN PRINTING

John R. Larry, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 33,875, May 1, 1970, Pat. No. 3,672,934, which is a continuation-in-part of Ser. No. 886,035, Dec. 17, 1969, abandoned. This application Dec. 22, 1971, Ser. No. 211,080
Int. Cl. B44d *1/16;* **B41m** *1/12*
U.S. Cl. 117—121 **5 Claims**

The invention relates to screen and/or substrate surfaces, used in screen printing, having decreased wettability. At least one of said surfaces is coated with a fluorinated organic compound which reduces the surface energy of the treated surface. Such coatings on the screen printing surfaces which contact screen printing pastes result in significant reduction of Spreading of the paste on the substrate.

3,754,980

DEVITRIFICATION-RESISTANT COATING FOR HIGH-SILICA GLASSES

Joseph W. Malmendier, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,824
Int. Cl. C03c *17/02, 5/00*
U.S. Cl. 117—124 A **3 Claims**

A devitrification-resistant glaze for high-silica glasses, particularly effective in inhibiting surface devitrification at elevated temperatures under highly alkaline conditions, formed from a coating consisting essentially of Ta_2O_5 but also containing up to about 85 percent by weight Al_2O_3 and up to about 50 percent by weight SiO_2. The coating is preferably applied in the form of an aqueous slurry which is dried and fired to produce a vitreous glaze.

3,754,981

PROCESS FOR FLAMEPROOFING CELLULOSE-CONTAINING FIBRE MATERIAL

Hermann Nachbur, Dornach; Helmut Huber-Emden, Basel; Joerg Kern, Oberwil, Basel-land, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed June 9, 1971, Ser. No. 151,529
Claims priority, application Switzerland, June 11, 1970, 8807/70
Int. Cl. C09k *3/28;* **D06m** *13/32*
U.S. Cl. 117—136 **9 Claims**

A process for the flame-proofing of cellulose-containing fibrous materials by applying to the substrates aqueous preparations containing a self-condensation product of an N-methylolamide of a dialkyl, dihalogenalkyl or dialkenyl phosphonopropionic acid advantageously together with a curable aminoplast precondensate.

3,754,982

FIREPROOFING COMPOSITION FOR CELLULOSIC MATERIALS

Jay C. Chapin, Marblehead, Mass., assignor to Ventron Instruments Corp., Scientific Chemicals Division, Beverly, Mass.

Filed Jan. 11, 1971, Ser. No. 105,629
Int. Cl. C09k *3/28;* **D06m** *13/26*
U.S. Cl. 117—137 **3 Claims**

Cellulosic fibers or fabrics of a bleached or pastel shaded coloring when impregnated with additives for imparting unique characteristics, such as fire retardancy, and subjected to temperatures such as are encountered in drying and curing operations, generally exhibit definite and permanent discoloration. Such discoloration can be avoided or minimized if the treated cellulosic fibrous substrates have hydrazine or derivatives thereof incorporated into the additive prior to a heat treatment operation. For example, if an aqueous composition being applied to rayon or other cellulosic material consists essentially of an inorganic nitrogen-phosphorus polymeric resinous flame-proofing reaction product and hydrazine, the impregnated fabric, when dried and subject to a heat curing operation, shows little or no discoloration.

3,754,983

ARTICLES COATED WITH WAX COMPOSITION AND METHOD OF MAKING

Vernon D. Parker, Lawrence, Kans., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 28, 1971, Ser. No. 110,661
Int. Cl. B27k *3/34*
U.S. Cl. 117—148 **7 Claims**

Novel high-melting wax compositions are prepared by heat-curing a mixture of petroleum wax, an olefin-vinyl ester copolymer and an aluminum polyalkoxide. Novel coating methods utilizing the new wax compositions are also disclosed.

3,754,984

SILICA SOL COMPOSITIONS AND USE FOR COATING

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

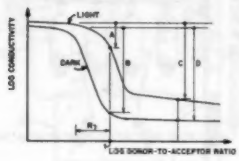
Division of Ser. No. 111,619, Feb. 1, 1971, Pat. No. 3,689,431. Filed Feb. 14, 1972, Ser. No. 226,315
Int. Cl. D21h *1/10*
U.S. Cl. 117—152 **6 Claims**

Silica sol compositions especially useful for coatings are prepared by homogenizing an aqueous silica sol with a silica powder. The compositions are particularly useful for improving the frictionizing of paper.

3,754,985
PROCESS FOR MAKING A SINTERED PHOTOCONDUCTIVE BODY

Guy A. Marlor, Los Altos, and John B. Mooney, Saratoga, both of Calif., assignors to Photophysics, Inc., Mountain View, Calif.

Filed Apr. 5, 1971, Ser. No. 130,983
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 117—201 11 Claims



A process for making a sintered photoconductive body comprising growing cadmium sulfide crystals in the presence of hydrogen chloride gas to provide donor doping of the resultant crystals, pulverizing the donor crystals and measuring the chlorine content of the resultant pulverized donor doped material, mixing a quantity of copper with the donor doped material to provide acceptor doping, the quantity of copper being in a selected ratio to the quantity of chlorine, and finally, sintering the mixture to form the sintered photoconductive body.

3,754,986
ORGANIC SEMICONDUCTORS

Evelio A. Perez-Albuerne, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 851,088, Aug. 18, 1969, Pat. No. 3,634,336. This application Apr. 23, 1971, Ser. No. 137,059
Int. Cl. H01b *1/06*
U.S. Cl. 117—201 14 Claims

Organic semiconductors are described having an electron donating cation which is a Group V*la* element derivative of a polycyclic aromatic hydrocarbon and an inorganic or organic electron-accepting anion. These materials are generally soluble in ordinary solvents and have resistivities between 10^{-3} and 10^{9} ohm-cm. They are useful in conducting coatings, fibers, etc.

3,754,987
METHOD OF PRODUCING AREAS OF RELATIVELY HIGH ELECTRICAL RESISTIVITY IN DIELECTRIC SUBSTRATES

Andrew J. Purdes, Madison, Ill., assignor to Texas Instruments Incorporated, Dallas, Tex.

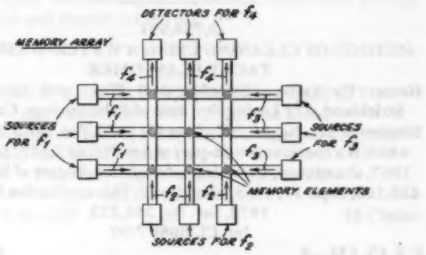
Continuation-in-part of Ser. No. 788,019, Dec. 30, 1968, abandoned. This application June 4, 1971, Ser. No. 150,201
Int. Cl. B44d *1/18, 1/20*
U.S. Cl. 117—212 28 Claims

Areas of relatively high electrical resistivity in a dielectric substrate, such as doped barium titanate, may be produced by first forming a relatively porous substrate which may be handled without breaking, as by prefiring the substrate, masking selected portions of the substrate with a material such as a photoresist material which will vaporize during final firing of the substrate, contacting the substrate with a solution of a first reactant, immersing at least a portion of the substrate in a solution of a second reactant which will react with the first reactant to precipitate in situ in a portion of the substrate a transition metallic compound which is insoluble in the solutions and which is adapted to increase the electrical resistivity of the said portion of the substrate, and thereafter firing the sustrate at a temperature on the order of 1,300° – 1,450°C. to reduce the porosity of the substrate and to incorporate the insoluble compound into the lattice of selected portions of the substrate. The starting material may be a lanthanum doped barium titanate, for example, the solution of the first reactant may be an aqueous solution of a compound such as ammonium hydroxide, and the solution of the second reactant may be an aqueous solution of an iron compound such as ferric chloride which reacts with the ammonium hydroxide to precipitate in situ ferric hydroxide which, when fired, produces a high resistivity area.

3,754,988
QUANTUM STATE MEMORY

Frank S. Barnes, Boulder, Colo., assignor to Patent Technology International, Inc., New York, N.Y.

Division of Ser. No. 692,425, Dec. 21, 1967, Pat. No. 3,567,371. This application Nov. 20, 1970, Ser. No. 91,440
Int. Cl. B44d *1/18;* B32b *31/00;* G02b *5/14*
U.S. Cl. 117—212 9 Claims



A quantum state memory is described made up of a matrix suitable for conducting electromagnetic radiation along the paths of the matrix to the intersecting points. A suitable material is located at the intersecting points characterized by two quantum states which may be generated by atoms, molecules, or ions in liquids, solids, or gases. The switching between the quantum states is accomplished by subjecting the material at the intersecting points to electromagnetic radiation at two frequencies, in one case, and at a single frequency in the opposite case. Detection means are provided to determine the quantum state.

3,754,989
ELECTRICAL RESISTOR COATED WITH FLAMEPROOF COATING COMPOSITION

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 724,271, April 25, 1968, Pat. No. 3,598,617. This application Dec. 1, 1970, Ser. No. 94,198
Int. Cl. H01c *7/00*
U.S. Cl. 117—219 6 Claims

An electrical resistor coated with a coating composition comprising a) an at least partially hydrolyzed tetraalkyl orthosilicate, b) aluminum oxide, c) titanium dioxide, d) silicon dioxide, and e) a suspension agent, wherein said titanium dioxide and said suspension agent are added to the composition as dry particles having agglomerates greater than about 1 micron in size, and wherein the alkali metal content of said coating composition is such that, upon curing, a coating prepared from said composition contains f) less than about 0.05% Na, g) less than about 0.05 K, h) less than about 0.01% Li, i) less than about 0.001% Cs, and j) less than about 0.001% Rb, all percentages being in terms of the oxides of the respective alkali metals.

ERRATUM

For Class 117—126 GB see:
Patent No. 3,755,009

3,754,990
CLEANING OF FERROUS METAL SURFACES

Fred Norman Teumac, Charlotte, N.C., and James Scott Scruggs, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

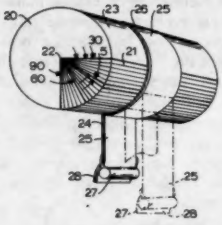
Division of Ser. No. 704,265, Feb. 9, 1968, Pat. No. 3,627,687. This application Feb. 22, 1971, Ser. No. 117,806
Int. Cl. C23g *1/18, 1/26*; B08b *9/08*
U.S. Cl. 134—2 **4 Claims**

The invention is based on the discovery that upon adding a polyamine having intralinear amino groups to an aqueous alkaline solution of an ammoniated or aminated polycarboxylic acid chelating agent, a new and improved metal cleaning solution is provided. Upon bringing such cleaning solution into contact with a ferrous metal surface having hardness and/or iron oxide scale, and copper, thereon and the solution being maintained at a temperature above about 155°C. for a time sufficient to dissolve all the hardness and iron oxides, the copper is dissolved and neither precipitates from solution nor deposits on the ferrous metal surface.

3,754,991
METHOD OF CLEANING USING A WATER-WASHABLE TACKY ELASTOMER

Homer C. Amos, 1086 Marshall Way, and Edward T. Strickland, 171 Luring Dr., both of Palm Springs, Calif.

Division of Ser. No. 46,967, June 17, 1970, Pat. No. 3,682,690, which is a continuation-in-part of Ser. No. 612,547, Jan. 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 488,166, Sept. 17, 1965, abandoned. This application May 17, 1972, Ser. No. 254,223
Int. Cl. B08b *7/00*
U.S. Cl. 134—4 **6 Claims**



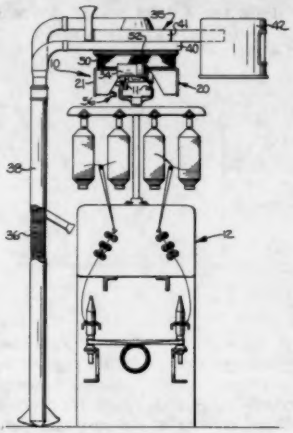
Upon a base is a film of water-washable tacky elastomer, having a modulus of elasticity (Young's modulus) of about 1 to 100 p.s.i., and an internal viscosity of about 1000 to 20,000 poises or expressed in minutes by another test method, of from 0.1 to 800 minutes. The elastomer is a hydrophobic, water-insoluble elastic solid with low creep, typically made from such materials as polyvinyl chloride, copolymer of vinyl chloride and vinyl acetate, polyurethane, or polysulfide; often a plasticizer compatible therewith is employed to obtain the desired physical qualities. The film coated base is usable to embed solid particles such as dirt, dust, and hair in the film by contacting the film with the article to be cleaned. Water washing is used to remove the embedded particles from the elastomer without substantially affecting its tackiness.

3,754,992
TRAVELING PNEUMATIC CLEANER AND METHOD

Charles D. Lee, Jr., Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed May 7, 1971, Ser. No. 141,338
Int. Cl. A47l *5/14*; B08b *5/04*
U.S. Cl. 134—21 **21 Claims**

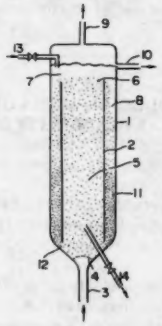
A method and apparatus for removing lint and the like from an elongate textile machine such as a spinning frame wherein a housing is traveled back and forth above and along the machine while a flow of air through the housing and a tube depending therefrom is induced. Travel of the housing and tube is such that the tube passes along aisle space to one side of the machine and, when the housing approaches an end portion of the machine, is rotated about a substantially vertical axis overlying the machine and passes around the end of the machine to a position in aisle space to the opposite side thereof. Continuing movement of the housing and tube back and forth above and along the machine subjects both sides of the machine to pneumatic cleaning.



3,754,993
LIQUID-SOLID PARTICLE OR LIQUID-GAS-SOLID PARTICLE CONTACTING METHOD

Yutaka Oguchi, Tokyo, and Junichi Kubo, Kawasaki, both of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed June 17, 1970, Ser. No. 46,862
Claims priority, application Japan, June 21, 1969, 44/48674
Int. Cl. B08b *3/04*; C10g *23/08*
U.S. Cl. 134—25 R **8 Claims**



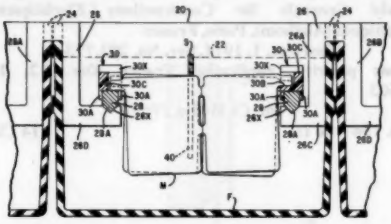
A novel liquid-particulate solid or liquid-gas-particulate solid contacting method which comprises causing a liquid and a particulate solid or a liquid, a gas and a particulate solid which have contacted each other in a contact zone while ascending through the contact zone in substantial motion to overflow into an overflow zone, allowing the particulate solid to freely drop through a precipitation zone in succession to the overflow zone and recycling the particulate solid to below the contact zone.

3,754,994

FORMING TANK FOR LEAD-ACID BATTERY PLATES

Anthony Roach, San Leandro, Calif., assignor to Eltra Corporation, Toledo, Ohio

Filed May 24, 1972, Ser. No. 256,322
Int. Cl. H01m 35/18
U.S. Cl. 136—34 5 Claims



A tank for electrically forming battery plates for a lead-acid storage battery is disclosed wherein the lugs of a double plate either positive or negative are placed in electrical contact with one horizontal bar of lead alloy in spaced groups and held in insulated position on a second horizontal bar on the opposite side of the tank during the forming operation. Supporting elements for the horizontal bars making contact with the plate lugs are made of different sizes cooperating with a slot in the upper edge of the tank to compensate for the plates of various dimensions having different power capacities.

3,754,995

HIGH TEMPERATURE FUEL CELL

Herbert Kleinschmager, Eppelheim, Germany, assignor to Brown, Boveri & Cie AG, Postfach, Mannheim, Germany

Filed May 16, 1972, Ser. No. 253,861
Claims priority, application Germany, May 19, 1971, P 21 24 814.6
Int. Cl. H01m 27/00
U.S. Cl. 136—86 R 3 Claims

A high temperature fuel cell is disclosed. The fuel cell is of the kind wherein a porous electrolyte body of compressed zirconium dioxide — ZrO_2 — is admixed with additives of alkaline earth metal oxide or rare earth metal oxide. An anode layer of metallic nickel is deposited on a first surface of the electrolyte body which has a rough surface configuration. In accordance with the invention, a cathode layer is deposited on a second surface of the electrolyte body, the cathode layer being formed from a mixture of tin oxide — SnO_2 — and antimony oxide — Sb_2O_3 —, the amount of antimony oxide in the mixture ranging between about 7 and 30 mole percent.

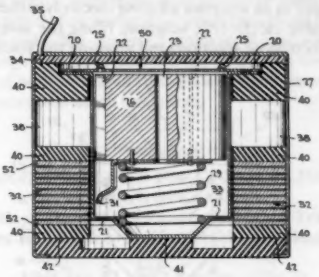
3,754,996

DUCTILE AMPULE DEFERRED ACTION BATTERY

Gilbert R. Snyder, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1972, Ser. No. 266,958
Int. Cl. H01m 17/06
U.S. Cl. 136—90 15 Claims

A ductile ampule deferred action battery for use in fuses and other projectiles which is actuated internally by the set back forces of acceleration from a gun or other impelling means. This battery comprises an ampule that contains a weight attached to a spring, said weight and said spring having their principle axis parallel to the acceleration vector such that upon acceleration said weight depresses said spring causing the cutter attached to the weight to pierce the ductile ampule. This ampule and battery assembly will not break upon dropping or activate upon dropping because (1) the ampule is made out of the ductile material, (2) the weight spring combination immersed in the electrolyte acts as a dash-pot and the loading imparted to the weight upon dropping and normal handling is not sufficient to overcome the dash-pot forces exerted upon the weight and cause the weight to move enough such that the cutter can pierce the ampule. The ampule is used in combination with an annular stack of battery elements having the holes therein alligned to form a continuous passage into which said ampule is inserted.

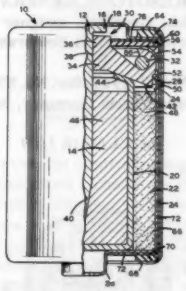


3,754,997

ELECTRIC BATTERY CELL WITH A PLASTIC TOP HAVING A SPRING PRESSURE SEAL

Robert E. Ralston, Spring Valley, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed June 16, 1971, Ser. No. 153,494
Int. Cl. H01m 21/00
U.S. Cl. 136—107 18 Claims



An electric cell with a plastic top closure as a circular disc that has a peripheral co-axial and concentric plastic border ring with a pre-stressed convoluted metal spring ring disposed within the plastic ring to establish permanent radially outward pressure against the plastic border ring, which is crimped over the metal ring by the crimped end of the container can. The spring convolution serves additionally as a rigid backing element for an additional pressure force on the plastic border ring, to prevent or limit unsealing effects that could arise from cold flow and creepage of the plastic ring.

3,754,998

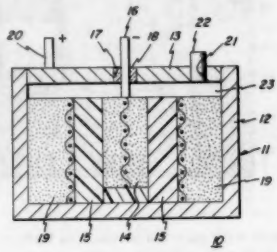
SILVER OXIDE-ZINC PRIMARY CELL WITH MAGNESIUM OXIDE

Robert P. Hamlen, Scotia, and Elihu C. Jerabek, Delmar, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 838,066, July 1, 1969. This application Jan. 21, 1971, Ser. No. 108,557
Int. Cl. H01m 17/00
U.S. Cl. 136—102 1 Claim

A silver oxide-zinc primary cell is disclosed which comprises a casing, a zinc anode positioned in the casing, a separator on each side of the anode, a silver oxide cathode on each side of the anode adjacent each separator and spaced from the

anode, and magnesium oxide powder contained within the cell. A method is disclosed for activating such a cell which does not contain the magnesium oxide powder which comprises mixing together 5 to 40 weight percent of magnesium oxide powder in an aqueous alkaline electrolyte thereby forming a pourable electrolytic solution, filling the assembled cell with the electrolytic solution, and allowing the viscosity of the



solution to increase prior to discharging the cell. A method is also disclosed for forming such a cell wherein magnesium oxide powder is added to the cell during assembly, and the assembled cell is filled with an aqueous alkaline electrolyte prior to use. In both of these methods upon activation of the previously assembled cell, a high viscosity electrolytic solution results thereby preventing silver migration to the anode and other cell components.

3,754,999

RADIOISOTOPIC GENERATOR

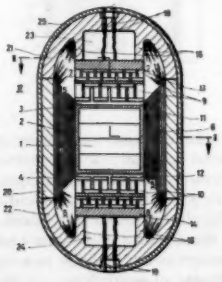
Veit Merges, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Haftung, Munich, Germany

Filed Nov. 7, 1969, Ser. No. 874,820

Claims priority, application Germany, Nov. 23, 1968, P 18 10 528.7

Int. Cl. G21h 1/10

U.S. Cl. 136—202 **5 Claims**



A radioisotopic or radionuclide generator comprises a radioisotope as a heat source and sealed within a thin-walled metal cylinder. Thermoelectric energy converters are arranged in heat transfer relation with the metal cylinder, and a thermal insulation surrounds the metal cylinder and the energy converters. The heat source, the energy converters and the thermal insulation are sealed within a thick-walled metal safety capsule whose exterior surface may be provided with a coat of depleted uranium to absorb gamma rays. The thick-walled sealing capsule has a central cylindrical portion and two hemispheric end portions welded or otherwise integral with the central cylindrical portion. The hemispheric ends of the capsule are designed as heat bridges for the energy converters. The thermal insulation is in the form of a cylinder whose mid-portion comprises a plurality of thin radially spaced metal foils of high thermal reflecting power, the spaces between the metal foils being highly evacuated. The end portions of the heat insulating cylinder comprise fibrous heat-insulating material, such as quartz cotton wool.

3,755,000

ELECTRODES AND FUEL CELLS

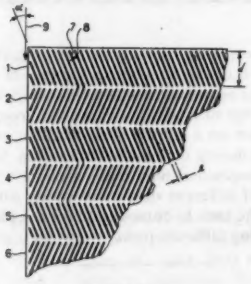
Philippe Demange, Chatenay-Malabry, France, assignor to Society Generale De Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Dec. 1, 1971, Ser. No. 203,773

Claims priority, application France, Dec. 12, 1970, 70/43603

Int. Cl. H01m 27/00

U.S. Cl. 136—86 D **14 Claims**



An improved electrode structure wherein the electrode is a non-porous embossed sheet. The electrode surface contains a plurality of projections arranged in bands. Each band occupies an area and the top and bottom of the band are substantially parallel to one of the margins and substantially perpendicular to the direction of contemplated fluid flow across the electrode. Each band of projections is an array of parallel elongated ridges inclined to said direction of fluid flow. The angle of said inclination is such that d sin $\alpha = ne$, wherein d is the distance between said top and bottom of said band, e is the distance between two adjacent ridges, and n is a whole number. The angle of inclination must also fall between 15° and 30°. The invention also includes a fuel cell comprising a stack of said electrodes.

3,755,001

METHOD OF MAKING SEMICONDUCTOR DEVICES WITH SELECTIVE DOPING AND SELECTIVE OXIDATION

Else Kooi, and Johannes Arnoldus Appels, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,654

Claims priority, application Netherlands, July 10, 1970, 7010206

Int. Cl. H01l 7/54

U.S. Cl. 148—1.5 **19 Claims**

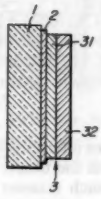
A method of manufacturing a semiconductor device having an inset oxide pattern obtained by local oxidation, which pattern is bounded only partly by a doped surface zone. According to the invention a first mask is provided on the semiconductor surface after which etching is carried out so that a freely projecting edge of said mask is formed by underetching. During the local doping of the etched surface the masking provided by said edge is used directly or indirectly after which the oxide pattern is provided.

3,755,002

METHOD OF MAKING PHOTOCONDUCTIVE FILM

Tadaaki Hirai, Koganei; Eiichi Maruyama, Kodaira, and Kiyohisa Inao, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1972, Ser. No. 242,949
Claims priority, application Japan, Apr. 13, 1971, 46/23086
Int. Cl. H01l 7/36
U.S. Cl. 148—1.5 11 Claims



An n-type film consisting of a group II – VI compound is evaporated on a transparent electrode, and heat-treated in an atmosphere containing group VI element or an inert gas. On this n-type film, a p-type film consisting of a vitreous material such as *Se*, *Te* and *As* is deposited to form a hetero junction, photoconductive film.

The above procedure enables the enhancement of the photosensitivity of a film more than three times as large as that of the conventional one.

3,755,003

METHOD OF PREPARING AND USING CONCRETE REINFORCING ELEMENTS

Bert E. Palm, Mentor, and Victor V. Germano, Mentor-on-the Lake, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 58,153, July 24, 1970, Pat. No. 3,682,718. This application May 11, 1972, Ser. No. 252,206
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 2 Claims

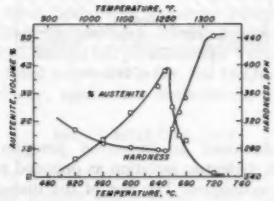
Concrete reinforcing elements are coated prior to there use with concrete. The coating comprises a pulverulent metal in intimate mixture with the residue from a composition containing an organic component plus a hexavalent-chromium-providing substance. The coating provides excellent corrosion resistance for the reinforcing elements and further affords enhanced adhesion for concrete to the coated element.

3,755,004

METHOD FOR PRODUCING ULTRA FINE-GRAINED MICROSTRUCTURE IN FERROUS ALLOYS

Robert L. Miller, North Huntingdon Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 21, 1971, Ser. No. 182,331
Int. Cl. C21d 7/14, 9/46
U.S. Cl. 148—12 14 Claims



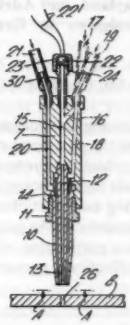
Ferrous alloys containing up to about 25 percent *Ni*, 15 percent *Mn*, 1.2 percent C, 0.5 percent N are cooled to form a martensitic or bainitic structure. The material is then worked to an extent sufficient to remove the principal nucleating effect of the prior austenite boundaries and other microstructural interfaces, so that when subsequently heated into the multiphase region, recrystallization occurs by random nucleation of extremely fine austenite crystals thoughout the material. Exceptionally fine equiaxed grains in the micron and submicron range are achieved, thereby providing unique combinations of both increased strength along with increased ductility and increased notch toughness.

3,755,005

METHOD AND DEVICE FOR CONTROLLING GAS CUTTING OPERATION

Hidehiko Hayasaki, and Eiji Kawakami, both of Tokyo, Japan, assignors to Kabushiki Kaisha Tanaka Seisakusho, Tokyo, Japan

Filed Jan. 21, 1972, Ser. No. 219,629
Claims priority, application Japan, Sept. 13, 1971, 46/70362
Int. Cl. B23k 7/10
U.S. Cl. 148—9 R 11 Claims



A method and device for controlling a gas cutting operation comprising a photosensitive element provided at a location on the gas cutting device in alignment with the path of cutting oxygen and its ejection vent to accept light emanating from the oxidation reaction portion of the cutting flame. The photosensitive element produces an electric output voltage when the luminous output from the oxidization reaction at the gas cutting impinges onto the element. The output voltage varies according to the variation of the intensity of the luminous output. The gas cutting device is controlled in response to the electric output voltage of the photosensitive element to stop running or to stop the supply of gases according to a predetermined program.

3,755,006

DIFFUSED JUNCTION GAP ELECTROLUMINESCENT DEVICE

Horace Craig Casey, Jr., Summit, and Lars Christian Luther, Basking Ridge, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 28, 1971, Ser. No. 193,606
Int. Cl. H01l 7/44
U.S. Cl. 148—33 7 Claims

p-n junctions for electroluminescent devices are produced in GaP and related semiconductors by diffusing zinc into an n-type wafer. The diffusion takes place in a sealed capsule with ZnP_2 as the zinc source. The ZnP_2 is included in the capsule in an amount which entirely evaporates during diffusion. When the n-type wafer also includes oxygen as a dopant, the emission of red light is enhanced by a subsequent heat treatment in a zinc-free atmosphere. In the absence of oxygen doping, green light is emitted.

3,755,007

STABILIZED PERMANENT MAGNET COMPRISING A SINTERED AND QUENCHED BODY OF COMPACTED COBALT-RARE EARTH PARTICLES

Mark G. Benz, Burnt Hills, and Donald L. Martin, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,108
Int. Cl. H01f 1/02
U.S. Cl. 148—101 8 Claims

A process for producing a novel cobalt-rare earth intermetallic permanent magnet material having a substantially stable magnetization at ambient temperatures above room temperature. A sintered cobalt-rare earth intermetallic product, in bulk or particulate form, is provided. The product is brought to quench temperature T_q ranging from about 750° C to 950° C and then it is fast cooled from said quench temperature T_q at a rate no less than about 75° C per minute to about room temperature.

3,755,008

PROCESS FOR ENHANCING MAGNETIC PROPERTIES OF METAL POWDER BY HEAT TREATING WITH SALT

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, both of Mass., assignors to Graham Magnetics, Inc., Graham, Tex.

Filed Mar. 24, 1971, Ser. No. 127,851
Int. Cl. H01f 1/02
U.S. Cl. 148—105 7 Claims

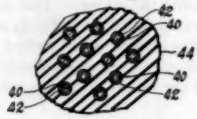
A process for enhancing the magnetic properties of small particulate ferromagnetic powders, e.g. particles below the critical diameter for which an untreated particle's domain-boundary energy equals its magnetostatic energy, the process comprising heat treating said particles. In the more favorable embodiments of the invention, the particles are heated in intimate association with a particulate refractory material which serves as a shield for effectively preventing excessive sintering of the metal particles.

3,755,009

GLASS FIBER REINFORCED ELASTOMERS

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 6, 1971, Ser. No. 140,768
Int. Cl. C03c 25/02
U.S. Cl. 117—126 GB 11 Claims



This invention is addressed to the improvement in the bonding relationship between glass fibers and elastomeric materials in the manufacture of glass fiber reinforced elastomeric products wherein individual glass fibers are coated, or bundles of glass fibers are impregnated with a polymer blend composition comprising an acrylonitrile-butadiene-styrene terpolymer, a copolymer of vinyl chloride and vinylidene chloride and a terpolymer of butadiene-styrene-vinyl pyridine.

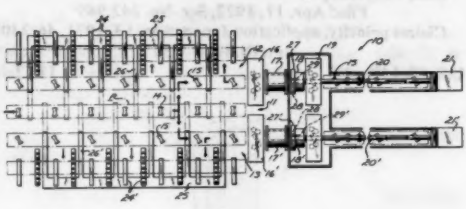
3,755,010

TANDEM SCAN HARDENING OF PIPE

Louis J. Molterno, Girard, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio

Filed Sept. 8, 1971, Ser. No. 178,590
Int. Cl. C21d 1/42, 9/14
U.S. Cl. 148—153 9 Claims

There is disclosed herein two induction scan hardening and tempering lines wherein pipe is moved axially one way through an induction coil and quench for hardening and in the opposite direction through the coil for tempering, as phases of predetermined cycles. A single supply conveyor sequentially conveys new pipes to a position adjacent to the hardening



lines, and transfer means alternately deposit a pipe first on one hardening line and then the other. Automatic control means control the cycles in such manner as to cause the cycles to overlap whereby fully treated pipe is discharged at intervals substantially less than the time consumed by a single cycle.

3,755,011

METHOD FOR DEPOSITING AN EPITAXIAL SEMICONDUCTIVE LAYER FROM THE LIQUID PHASE

Hans Peter Kleinknecht, Bergdietikon, and Alfred Heinrich Oberholzer, Zurich, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,634
Int. Cl. H01l 7/38
U.S. Cl. 148—171 4 Claims

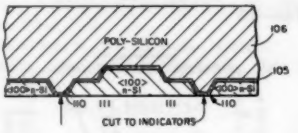
An epitaxial layer of a semiconductive material is deposited on a substrate in a furnace boat having a well and a cup-shaped piston fitting in the well with the piston having a small hole in its top end. A heated solution of the semiconductive material dissolved in a molten metal solvent is provided in the well. The piston is pressed down against the solution to force some of the solution through the hole in the piston onto the top end of the piston. As the solution passes through the hole in the piston the solution is scraped clean of contaminants. The substrate is placed against the cleaned portion of the solution on the top end of the piston and the solution is cooled to deposit an epitaxial layer of the semiconductive material onto the substrate.

3,755,012

CONTROLLED ANISOTROPIC ETCHING PROCESS FOR FABRICATING DIELECTRICALLY ISOLATED FIELD EFFECT TRANSISTOR

William Lloyd George, Scottsdale, and James Brian Price, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1971, Ser. No. 126,231
Int. Cl. H01l 7/50, 7/00, 11/14
U.S. Cl. 148—175 8 Claims



There is disclosed an improved junction field effect transistor with dielectric isolation as opposed to isolation by PN junction techniques. The use of the dielectric isolation lowers parasitic capacitance and permits the use of a single gate for the control of the current from the source to the drain of the device. The use of a single gate and the dielectric isolation prevents this parasitic capacitance and the concomitant

reduction of the frequency response of the device by eliminating the need for a large area second gate which generates the unwanted parasitic capacitance. In the two gate embodiment of the subject invention, the second gate area is minimized so as to minimize the parasitic capacitance. The gain of the subject device is increased by internally connecting the two gates with a deep diffused region therebetween. There is further disclosed a method for making junction field effect transistors such that the channel width is accurately controlled.

3,755,013

LIQUID SOLUTION METHOD OF EPITAXIALLY DEPOSITING A SEMICONDUCTOR COMPOUND

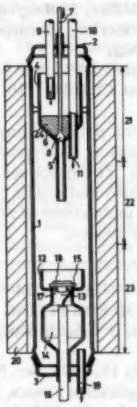
Laszlo Hollan, Sevres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,151

Claims priority, application France, Apr. 2, 1970, 7011879

Int. Cl. H01l 7/38; B01j 17/20; B05r 3/02

U.S. Cl. 148—172 9 Claims



The invention relates to a method of epitaxially depositing a semiconductor compound from a saturated solution on a substrate. The temperature at the interface substrate-saturated solution is equal to the temperature at which the saturated solution is prepared in a part of the reactor situated above the substrate by leading vapour of a component of the compound over another component of the compound which serves as a solvent.

3,755,014

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE EMPLOYING SELECTIVE DOPING AND SELECTIVE OXIDATION

Johannes Arnoldus Appels; Maria Magdalena Mathilda Paffen; Else Kooi, and Peter Johannes Philippus Gerardus Simons, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,652

Claims priority, application Netherlands, July 10, 1970, 7010207

Int. Cl. H01l 7/44, 7/54

U.S. Cl. 148—187 8 Claims

A method of manufacturing a semiconductor device having an inset oxide pattern and a doped zone which is present below said pattern and does not adjoin the surface. According to the invention, only one thin layer is used which masks both against doping and against oxidation. Via a first window the zone is first provided in said layer after which the window is enlarged and the pattern is formed by an oxidation treatment within the enlarged window, during which oxidation the zone is driven inwards.

3,755,015

ANTI-REFLECTION COATING FOR SEMICONDUCTOR DIODE ARRAY TARGETS

Rowland W. Redington, and S. Morry Blumenfeld, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,608

Int. Cl. H01l 7/38

U.S. Cl. 148—188 6 Claims

A method is described for increasing the minority carrier collection efficiency of a semiconductor camera tube target structure by forming a region of increased conductivity and an anti-reflective coating simultaneously on the light-admitting surface of the target structure. For example, a doped glass is deposited to a quarter wavelength thickness and then heated to diffuse the dopant into the silicon substrate. The resultant is an n^+ layer underlying a one quarter wavelength thick SiO_2 anti-reflection coating.

3,755,016

DIFFUSION PROCESS FOR COMPOUND SEMICONDUCTORS

Malcolm J. Russ, Scottsdale, and Edwin Coats, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 20, 1972, Ser. No. 236,012

Int. Cl. H01l 7/44

U.S. Cl. 148—189 6 Claims

There is disclosed a method of manufacturing compound semiconductor devices under ambient pressure conditions. The process includes heating a source of dopant material selected from the group consisting of the II–VI compounds and III–V compounds together with a semiconductor substrate selected from the group consisting of III–V compounds and II–VI compounds to a predetermined temperature while passing an inert gas, preferably nitrogen, thereover. Thereafter forming gas (95 percent N_2 – 5 percent H_2) is passed over the source material and the substrate to effect reduction of the source material; a deposition of dopant ions on the semiconductor substrate; and diffusion of the dopant ions therein. In accordance with preferred embodiment of the invention linc oxide is used as the source material for substrates of GaAs, $GaAs_xP_{1-x}$ and GaP. The process permits the use of a single temperature operation for deposition and diffusion. The donor ions present in the source material do not diffuse readily enough into the compound semiconductor substrates to affect the doping concentration provided by the acceptor ions.

3,755,017

METHOD OF DIFFUSING AN IMPURITY INTO A SEMICONDUCTOR BODY

Bernard Joseph Coughlin, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,430

Claims priority, application Great Britain, Jan. 11, 1971, 1,193/71

Int. Cl. H01l 7/44

U.S. Cl. 148—189 9 Claims

Method of diffusing vapor impurity into semiconductor body comprising providing impurity source and semiconductor body in separate open-ended vessels, inserting vessels in furnace and heating semiconductor body to diffusion temperature range before initiating diffusion on significant scale, and diffusing impurity into semiconductor body. Also, product made by method.

3,755,018

COMPOSITION AND PROCESS FOR INHIBITING CORROSION OF NON-FERROUS METAL SURFACED ARTICLES AND PROVIDING RECEPTIVE SURFACE FOR SYNTHETIC RESIN COATING COMPOSITIONS

Russell C. Miller, Chicago, Ill., assignor to J. M. Eltzroth & Associates, Inc., Schaumburg, Ill.

Filed Apr. 26, 1971, Ser. No. 137,682
Int. Cl. C23f 7/26
U.S. Cl. 148—6.21 4 Claims

Compositions and a process are provided for inhibiting corrosion of non-ferrous metal surfaces and for producing a surface to which synthetic resin coating compositions will adhere so that the resultant coatings have satisfactory impact and bending resistance, together with resistance to creeping corrosion between the metal and the dried resin coating.

3,755,019

SOLID PROPELLANT COMPOSITIONS CONTAINING PLASTICIZED NITROCELLULOSE AND ALUMINUM HYDRIDE

Chester W. Huskins, Huntsville, Ala.; Clay D. Howard, Pulaski, Tenn., and Orval E. Ayers, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 13, 1963, Ser. No. 265,592
Int. Cl. C06d 5/06
U.S. Cl. 149—18 5 Claims

1. A solid propellant composition consisting essentially of a cured intimate mixture of from about 5% to about 25% by weight powdered aluminum hydride; from about 30% to about 70% by weight of an oxidizing agent selected from the group consisting of ammonium perchlorate, sodium perchlorate, potassium perchlorate, ammonium nitrate, potassium nitrate, and sodium nitrate; and from about 15% to about 70% by weight of plasticized nitrocellulose.

3,755,020

INCENDIARY COMPOSITION CONTAINING LITHIUM AND A GELLED HYDROCARBON CARRIER

Robert L. Durfee, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1968, Ser. No. 722,492
Int. Cl. C06b 15/00
U.S. Cl. 149—20 5 Claims

An incendiary composition containing lithium in a liquid hydrocarbon carrier.

3,755,021

NITRIC ESTER EXPLOSIVE COMPOSITION CONTAINING FUME REDUCING AGENT

Vladimir Sujansky, Melbourne, Australia, assignor to ICI Australia Limited, Melbourne, Victoria, Australia

Filed June 5, 1972, Ser. No. 259,604
Claims priority, application Australia, June 28, 1971, 5238
Int. Cl. C06b 3/02
U.S. Cl. 149—103 8 Claims

A gelatin explosive composition of matter containing liquid explosive nitric ester material characterised in that said composition comprises an amount of at least one fixative or fume reducing agent sufficient to reduce the volatility or fluidity of said nitric ester material.

3,755,022

PROCESS FOR TRACING LOCATION MARKS ON A CANVAS BASE

Jean Chretin, 2 bis rue Francisque Jonard, Oullins, and Andre Thomasset, 5 Boulevard du 11, Novembre 1918, Villeurbanne, both of France

Filed Apr. 6, 1971, Ser. No. 131,613
Int. Cl. B29c 27/30
U.S. Cl. 156—1 9 Claims

The invention is concerned with a new process for tracing location marks on a canvas 4 which is to be used in the production of a rug or a tapestry.

The canvas 4 is fitted on to the pegs 2 of a plate 1, to re-establish the correct geometry of the meshes of the canvas. Then, a thin sheet 5 carrying a pattern is applied to the canvas. A top-plate 8 presses the sheet against the canvas.

This procedure permits the precise positioning of each mark 6 on the corresponding threads of the canvas 4.

3,755,023

TECHNIQUE FOR ETCH POLISHING SINGLE RARE EARTH CRYSTAL SYNTHETIC GARNET

David Christopher Miller, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 9, 1971, Ser. No. 206,529
Int. Cl. H01l 7/50, 7/62
U.S. Cl. 156—2 8 Claims

A technique for etch polishing single crystal synthetic garnet involves etch polishing the crystal in hot phosphoric acid saturated with steam. The described technique significantly enhances reproducibility and results in crystals manifesting an amplitude of surface undulations of ±0.25 microns or less with a frequency of 100 or greater.

3,755,024

METHOD FOR FIXING A LINING

Basile Pierre Grapin, 3 Grande Rue, 91, Saintry-Sur-Seine, France

Filed July 19, 1971, Ser. No. 163,694
Claims priority, application France, July 20, 1970, 7026609
Int. Cl. C09j 3/12
U.S. Cl. 156—57 10 Claims

Method for fixing a lining to a surface of a fur, leather, hide, skin or animal fibre article, comprising bringing the surface of the lining and the surface of the article in face-to-face relation, spraying an adhesive latex on at least one of these surfaces at room temperature and pressing the two surfaces together.

3,755,025

PRODUCTION OF DOUBLET BLANKS FOR SIMULATED DIAMONDS

Harry S. Jones, Monmouth Beach, N.J., assignor to Chrom-Tronics, Inc., New York, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,564
Int. Cl. B32b 31/00; B28d 5/00; C04d 39/00
U.S. Cl. 156—61 11 Claims

Improved process for the production of doublet blanks suitable for facetting into simulated diamonds by providing a first slab of a high dispersion, high refractive index material, such as strontium titanate or lithium niobate, of a thickness about equal to the thickness of the pavilion of a gem stone to be cut therefrom; providing a second slab of a material which is harder than the material of said first slab, and is substantially transparent with respect thereto such as white spinel or white sapphire; providing at least one of said first and second slabs of a surface area and dimensions equivalent to at least two finished facetted stones; rendering one major surface each of both of said slabs substantially flat surfaces; adhering such flat surfaces together; and cutting out individual gem sized doublets suitable for facetting from said adhered slabs.

3,755,026

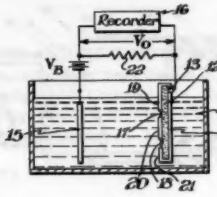
METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING TUNNEL OXIDE CONTACTS

John H. Reynolds, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Division of Ser. No. 767,173, Oct. 14, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,521

Int. Cl. H01l 7/50; B01k 3/00

U.S. Cl. 156—17 4 Claims



Semiconductor devices are provided which utilize space charge layers at the surface of a semiconductor to which contact is made through a sufficiently thin portion of an otherwise highly insulating material. The insulating material is thinned down by etching back to a width such that electrons are able to cross it by tunneling.

3,755,027

METHOD OF MANUFACTURING A GAS DISCHARGE PANEL AND PANEL MANUFACTURED BY SAID METHOD

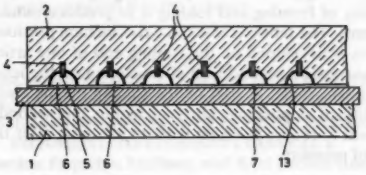
Johannes Andries Arnoldus Gilsing, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,277

Claims priority, application Netherlands, Nov. 19, 1970, 7016929

Int. Cl. B44d 5/00; B29d 3/00

U.S. Cl. 156—67 7 Claims



A gas discharge panel of which one or both panel plates are provided with cavities in the bottoms of which a conductor extends, which cavities and conductors are pressed in the softened material of the panel plate by means of a pressure plate in which cores in the form of balls or rods are secured, which cores comprise in the free end a groove in which the conductors are provided, which conductors remain behind in the panel plate after impression.

3,755,028

METHOD FOR MANUFACTURING NON-WOVEN TEXTILE ARTICLES

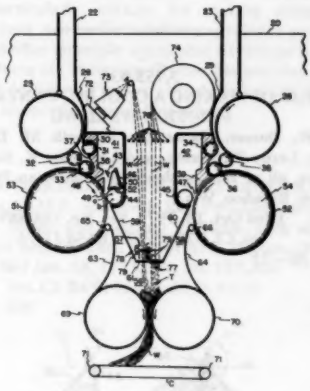
Dennis E. Wood, Penfield, N.Y., assignor to Curlator Corporation, East Rochester, N.Y.

Continuation of Ser. No. 47,029, June 17, 1970, abandoned, Division of Ser. No. 691,544, Dec. 18, 1967, Pat. No. 3,535,187. This application Oct. 8, 1971, Ser. No. 187,859

Int. Cl. B32b 19/00

U.S. Cl. 156—62.2 8 Claims

In this process various materials are fed into a condensing chamber between two rotary condensers to form a composite nonwoven product. Staple fibers may be formed into two separated mats from which the fibers are combed by lickerins into two separate air streams for delivery to the condensing chamber; and continuous filaments may be fed between the fibers to the condensers, and intermingled, in the nip between the condensers, with the staple fibers to form a non-woven and



continuous filament composite; or a powdered binder may be fed into the condensing chamber to form a two-type non-woven and powdered-binder composite; or staple fibers may be fed by three separate air streams into the nip between the condensers to form a three-type non-woven product.

3,755,029

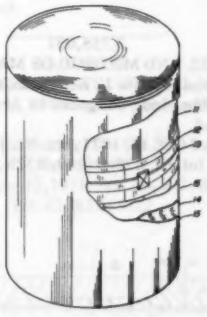
PROTECTIVE COATED THERMAL INSULATION

Wayne Philip Ellis, Radnor; George Washington Elkins Foster, Jr., Penllyn, both of Pa., and James Roy Allen, Wilmington, Del., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 811,290, March 28, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,805

Int. Cl. F16l 59/12

U.S. Cl. 156—71 6 Claims



A composite thermal insulation and protective coating for storage vessels, processing equipment, piping, ducting, and the like comprising mastic coated thermal insulation is constructed by securing to the vessel, pipe, or duct wall a first inner layer of insulation material and a second outer layer of a continuous self-supporting weather resistant flexible mastic coating; said first and second layers being tied to the vessel,

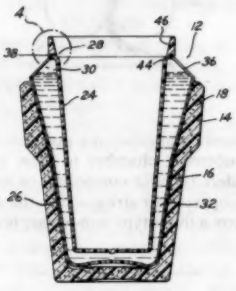
pipe, or duct by alternating inner and outer bands. The structural support of said bands in combination with the unusual tensile strength and elastomeric properties of said weather barrier mastic coating permits a completely insulated, weather proofed structure without the necessity of embedding a reinforcing membrane in said mastic with considerable savings in labor and material costs.

3,755,030

METHOD OF MAKING A COOLING CONTAINER BY FRICTION WELDING

Donald W. Doman, Janesville; Kenneth M. Douglas, Sun Prairie; Leroy W. Mason, and Lawrence K. Sauey, both of Baraboo, all of Wis., assignors to Flambeau Products Corporation, Baraboo, Wis.

Filed Oct. 13, 1971, Ser. No. 188,889
Int. Cl. B29c 27/08; B65d 11/16
U.S. Cl. 156—73 1 Claim



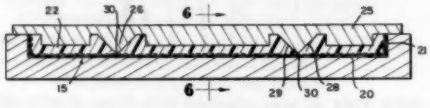
A product and process relating to the formation of a slush mug assembly are provided according to this invention. The slush mug is utilized to chill liquid beverages and the like for prolonged periods in relatively warm temperatures. The product and process particularly relate to a spin-welded joint for sealing a container to retain a refrigerant between the walls of the container.

3,755,031

PANEL AND METHOD OF MAKING IT

Frank A. Hoffman; Melvin L. Buchanan, and Carl J. Dunbar, all of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Oct. 13, 1971, Ser. No. 188,799
Int. Cl. B29c 19/00; B32b 5/18
U.S. Cl. 156—79 8 Claims



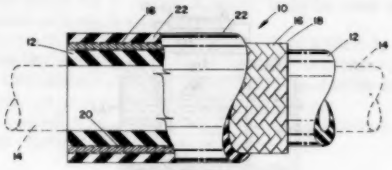
A panel construction and method of making it employing a flexible skin having a rigid block bonded thereto. A groove extends across said block with its apex terminating at said skin whereby said skin is foldable along the axis of said apex for forming the panel construction into the desired configuration.

3,755,032

METHOD OF MAKING A HIGH PRESSURE HOSE OF A SINGLE LAYER OF UNTWISTED TEXTILE REINFORCED RUBBER

Charles D. Higbee, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Jan. 25, 1971, Ser. No. 109,321
Int. Cl. B29c 27/00; B31c 00/00; B32b 00/00
U.S. Cl. 156—86 1 Claim



A heat setting polymeric hose having a high pack, textile reinforcement that shrinks at a temperature at least equal to the heat setting temperature of the polymeric. A method of fabricating a hose by twining a heat shrinkable and generally untwisted textile reinforcement around a heat curable polymeric tube; applying an adhesive and heat setting polymeric cover over the reinforcement; and heat setting or curing the polymeric while simultaneously shrinking the reinforcement to a predetermined position within the hose.

3,755,033

METHOD OF AND APPARATUS FOR PRODUCING HEMS ON CLOTH ARTICLES BY MEANS OF ADHESIVE

Ronald W. Emus, Greer, S.C., assignor to Southern Machinery Company, Green, S.C.

Filed May 14, 1971, Ser. No. 143,383
Int. Cl. D03d 47/50
U.S. Cl. 156—88 4 Claims

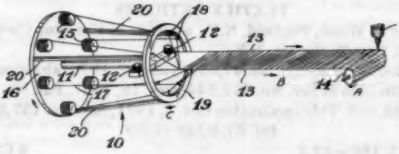
A predetermined or sensed length of fabric, such as toweling, is delivered to a position between fixed and movable devices having parts which, upon engaging the fabric, have the capability of forming and folding it to produce industry standard hems. The fabric is severed between hem portions so that one hem is developed on the trailing end of one article while simultaneously a second hem is developed on the leading end of the next article. A part of the folding means also has the capability of depositing adhesive within the second fold of each hem to secure the hem without stitching after the application of pressure.

3,755,034

METHOD FOR MAKING A HOLLOW FIBER SEPARATORY ELEMENT

Henry I. Mahon, Walnut Creek; Gene C. Doss, Brentwood; David B. Vang, Walnut Creek, all of Calif., and David A. Gavin, Miami, Fla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 118,598, Feb. 25, 1971, abandoned. This application Dec. 10, 1971, Ser. No. 206,793
Int. Cl. B32b 1/08; B31c 13/00; B65h 81/00
U.S. Cl. 156—169 11 Claims



A moving belt of hollow fibers is prepared by winding a continuous length of hollow fiber (or fibers) transversely around a

pair of moving guide members. The moving fiber belt is convolutely wound upon an axis generally transverse to the direction of movement of said belt to form a fiber bundle. A band of solidifiable resin is applied to at least one transverse section of the hollow fiber bundle and subsequently solidified (cured) to form a tube sheet. The separatory element is then prepared by cutting the tube sheet in a plane generally perpendicular to the bundle axis to form a tube sheet face portion having open fiber ends terminating therein.

3,755,035

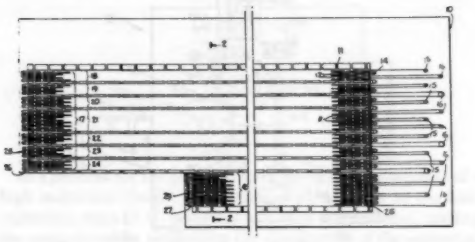
ARTICLE, MOLD AND METHOD OF MAKING ARTICLE

Mark W. Olson, Allendale, and Walter F. Silva, Riverdale, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 827,209, May 23, 1969, Pat. No. 3,635,623. This application Feb. 22, 1971, Ser. No. 117,723

Int. Cl. B32b *31/20*

U.S. Cl. 156—173 **2 Claims**



A method for making an electrical heater in a mold having parallel ribs and grooves comprises moving a sheet of plastic material into the grooves of the mold, positioning a heater member in the grooves over the plastic material and moving a second sheet of plastic material into the grooves over the heater member in each case using sufficient heat to move said sheets of plastic material into the grooves.

3,755,036

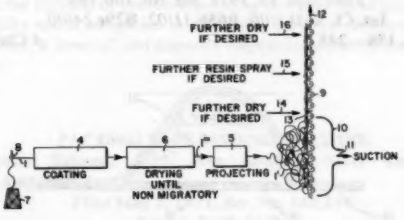
NON-WOVEN ARTICLES MADE BY COATING FILAMENTS WITH BINDER AND DRYING THE BINDER UNTIL NON-MIGRATORY BEFORE PROVIDING FILAMENT-TO-FILAMENT CONTACT

Elmer Gordon Paquette, Madison, and Karl Russell Guenther, Stoughton, both of Wis., assignors to Bjorksten Research Laboratories, Inc., Fitchburg, Wis.

Continuation-in-part of Ser. No. 876,005, Nov. 12, 1969, Pat. No. 3,616,002. This application Oct. 14, 1971, Ser. No. 189,125

Int. Cl. D04h *3/08*

U.S. Cl. 156—180 **4 Claims**



This invention deals with non-woven articles made from continuous filaments, including garments and porous sheet materials. In the past, non-woven products have suffered the handicap of a stiff and "boardy" feel. We coat continuous yarn or filaments with binder while preventing substantial filament-to-filament contact and they dry them sufficiently that the binder becomes non-migrating before the filaments are deposited on a screen or mold on which the fibers are brought into contact with each other and bonding takes place. This method is particularly suitable for making garments of elastomeric fibers, not easily handled in ordinary production machinery. Another generally applicable advantage is that the resultant products are exceptionally flexible and that the articles produced do not split into stratified binder-rich and-poor areas, but are uniformly bonded throughout.

3,755,037

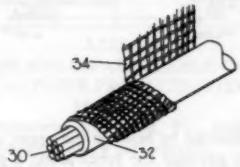
METHOD OF MAKING A FIBER REINFORCED RACKET

John R. Erwin, 6634 E. Sonnyvale Rd., Paradise Valley, Ariz.; Anthony F. Staub, and Norman T. Staub, both of Dayton Scale Model Company 2661 Culver Ave., Dayton, Ohio

Filed Jan. 18, 1971, Ser. No. 107,304

Int. Cl. B65h *81/00*; **A63b** *49/00*

U.S. Cl. 156—185 **4 Claims**



Racket having frame including an oval head portion and a handle portion integrally formed by a tubular member composed of helically wound fibers of high tensile strength embedded in a hardened binder and having a pre-formed reinforcing member defining the base of the oval head portion and bonded on opposite sides to the tubular member, the handle portion being defined in part by generally parallel extending portions of the tubular member surrounded by a grip.

Method of making a tubular article by helically winding high tensile strength fibers about a core provided with a substantially fluid tight casing; the core is removed and the wound casing is placed in a mold, a binder for the fibers is added, the interior of the casing is supplied with fluid under pressure, and the binder is hardened.

3,755,038

METHOD OF MAKING STRUCTURAL MATERIAL

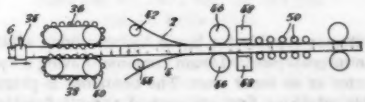
Susanne Klara Atteck, 39th St. Pauls Ave., Kenton, Harrow, England

Continuation-in-part of Ser. No. 854,853, Sept. 3, 1969, abandoned.

Filed May 12, 1971, Ser. No. 142,514

Int. Cl. B32b *3/12*

U.S. Cl. 156—197 **8 Claims**



The specification describes the preparation of a structural material which consists of a filling of substantially sinusoidally

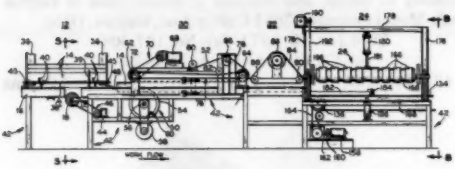
curved strips of sheet material, sandwiched between layers of sheet material, and bonded to these outer layers. The material may be in the form of a single or multi-layer sandwich and is made using at least one rotating member having formers projecting therefrom to deform initially parallel strips into substantially sinusoidal conformation.

3,755,039

METHOD OF SLITTING AND JACKETING CYLINDRICAL BODIES

Rupert Douglas Terry, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,356
Int. Cl. B31c *5/00*; B65h *81/00*; F16i *9/16*
U.S. Cl. 156—187 **4 Claims**



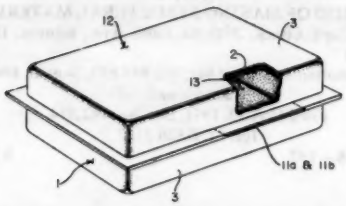
Tubes are contacted by belts on the upper portion of their outer surface to advance the tubes along a path paralleling their longitudinal axes with the lower well being slit and a guide subsequently being engaged to position the tube with its slot paralleling an edge of a sheet of jacketing material advanced toward the tube and positioned adjacent thereto whereby belts acting normal to the path of the tubes contact the upper portion of their outer surface to roll the tubes about their longitudinal axes to engage the sheet jacketing material wrapping it about the tube being rolled thereover.

3,755,040

CONTAINER FOR LIQUID HYDROCARBONS

Keith D. Robinson, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 15, 1971, Ser. No. 134,167
Int. Cl. B29c *1/14*
U.S. Cl. 156—242 **4 Claims**



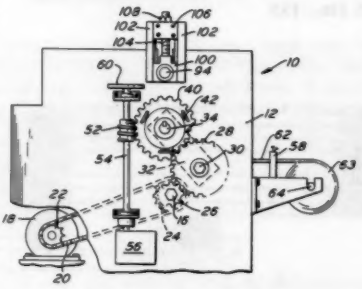
A container suitable for liquid hydrocarbons which comprises an internal pinched seam container having a hydrocarbon barrier as an inner liner. The container is prepared by releasably attaching first and second curable flexible sheets over the apertures of first and second concave molds, shaping the sheets by applying a pressure differential between the surface of each sheet facing its associated mold; after shaping the first sheet, providing an aperture therein through an aperture in the corresponding mold; adhering the peripheries of the two sheets together, before or after shaping the first sheet, and providing an opening in one of the sheets; curing the sheets after shaping to form a pinched seam container; removing the container from the molds; turning the container inside out through the provided opening therein; and sealing the said provided opening.

3,755,041

BAG MAKING MACHINE WITH ADJUSTABLE GEARS

Hercules Membrino, 1934 Arch St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 136,862, April 23, 1971, which is a continuation-in-part of Ser. No. 874,523, Nov. 6, 1969, Pat. No. 3,616,095. This application Dec. 9, 1971, Ser. No. 206,475
Int. Cl. B32b *31/00*
U.S. Cl. 156—515 **7 Claims**



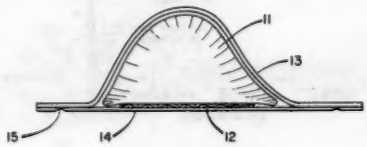
A machine for making bags from strips of thermoplastic material whereby the strip, either longitudinally overfolded or tubular, is passed from a supply roll over an impression roller where it is momentarily contacted by a heated blade means, which severs and seals along a line of seal to form the bags. The heated blade means is preferably in the form of an integral unit having two oppositely-extending blade portions. The blade means is rotated to bring the blade portions into alternate contact with the strip so that one complete rotation of the blade means forms two bags. The blade means is mounted on a shaft which is actuated by an elliptical gear assembly so that there is a variation in the speed of rotation of the blade means, Between the elliptical gear assembly and the shaft on which the blade means is mounted is a simple manual worm assembly to vary the rotational speed of the blade means as desired, and, thereby, various sizes of bags can be produced.

3,755,042

STERILE PACKAGING METHOD FOR SURGICAL DEVICES

Gordon W. Robertson, Larkin Twp., Midland County, and Lee H. Breasbois, Tittabawassee Twp., Saginaw County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sept. 15, 1971, Ser. No. 180,798
Int. Cl. A61l *1/00*; B65b *31/02*; B29c *24/00*
U.S. Cl. 156—245 **4 Claims**



Method of sterile packaging of a surgical device comprising heat forming a sheet of Teflon FEP to form a blister having

shape and dimensions of the device, placing the device in the blister, covering it with a second sheet of Teflon FEP, heat sealing the edges of the package and dry heat sterilizing the packaged device.

3,755,043

ELECTRET HAVING IMPROVED STABILITY

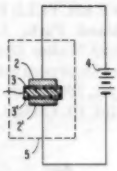
Yuriko Igarashi; Haruko Kakutani, both of Tokyo; Masayasu Suzuki, Fukushima; Makoto Fukuda, Fukushima, and Takao Abe, Fukushima, all of Japan, assignors to Kureha Kagaku Kagyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 10, 1970, Ser. No. 71,167

Claims priority, application Japan, Nov. 14, 1969, 44/90757; Sept. 10, 1969, 44/71254

Int. Cl. B29c *19/02*

U.S. Cl. 156—272 **5 Claims**



In a process for the production of an electret composed of a high molecular weight base material by applying to the base material a high D. C. potential at a high temperature, cooling the material while continuing the application of the potential, and then removing the electric potential, the improvement which comprises covering the opposite surfaces of the base material before polarizing the base material with thin films of a different high molecular weight material having a higher electrical insulating property than that of the base material prior to the application of the electric potential.

3,755,044

ADHESIVE COMPOSITIONS AND METHOD OF APPLICATION

Hans-Georg Sebel, Dusseldorf, Germany

Filed June 25, 1971, Ser. No. 156,954

Claims priority, application Germany, June 27, 1970, P 20 31 881.4

Int. Cl. B32b *31/00*

U.S. Cl. 156—289 **7 Claims**

An aqueous dispersion adhesive composition for preventing sliding or riding up of stacked packaged articles having coverings of paper, cardboard or pasteboard comprising an aqueous dispersion containing from 3 percent to 60 percent by weight based on the total composition, of an adhesive dispersible in water with surface-active agents selected from the group consisting of paraffins having a melting point range between 40° C to 100° C, polyalkylenes having from two to eight carbon atoms in the alkylene and average molecular weights of between 2,000 and 25,000, and mixtures thereof, and the method of preventing sliding or riding up of packaged articles which comprises interspersing between said packaged articles, a layer of said aqueous dispersion adhesive composition.

3,755,045

PACKING TAPE BINDING MACHINE

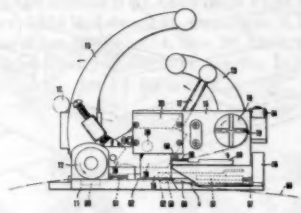
Masaho Takami, 1-15, Aza Kitaura, Nishi Tomatsu, Amagasaki, Japan

Filed May 7, 1971, Ser. No. 141,158

Int. Cl. B32b *31/00*

U.S. Cl. 156—366 **9 Claims**

A packing tape binding machine has a pressing device for pressing one end portion of the tape against the upper surface of a base plate, a heater for fusing, and an elevating body for holding the other end portion of the tape on said fusing heater and severing said tape while pressing the other end portion of the tape as it is cut on the one end portion of the tape positioned on the base plate. A tape winder is driven by a handle for winding the tape on a packing. A rack-driven tape welding



heater for melting the opposed upper and lower surfaces of the end portions of the tape is provided which can be advanced between the upper and lower end portions of the tape as the elevating body commences to descend when severing the other end portion of the tape and then withdrawn, the movement of the heater being controlled by a timer.

3,755,046

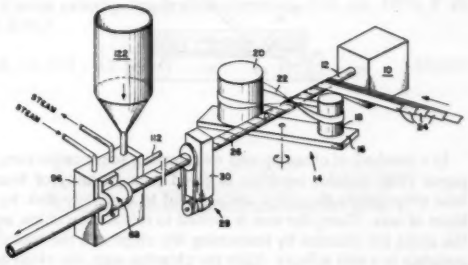
METHOD AND APPARATUS FOR COATING CYLINDRICAL PAPER PRODUCTS WITH A PLASTIC MATERIAL

Joseph T. Yovanovich, Rosemont, Pa., assignor to Milton Berger, Philadelphia, Pa., a part interest

Filed Aug. 3, 1971, Ser. No. 168,677

Int. Cl. B65h *81/04;* **B31c** *3/00*

U.S. Cl. 156—429 **11 Claims**



Method and apparatus are provided for continuously forming webs of paper stock freshly coated with adhesive into spiral tubing, reducing the tubing to a predetermined size before the adhesive dries, and thereafter extruding plastic material about the tubing for uniformly coating the same.

3,755,047

ELECTROCARDIOGRAM MOUNTING APPARATUS

Paul U. Larson, 6214 Washington Ave., St. Louis, Mo.

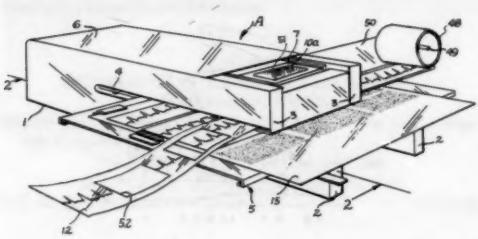
Filed July 12, 1971, Ser. No. 161,731

Int. Cl. B32b *31/00*

U.S. Cl. 156—510 **18 Claims**

In an apparatus for mounting portions or segments of an electrocardiographic tape upon a medical history record sheet, the sheet is fixedly supported upon a shiftable platen, with the electrocardiographic tape being transversely moved there-across in a superposed relationship until that portion of the tape which depicts a significant graphical segment of the heartbeat is focused in a viewer, at which time a punch and die combination function to sever that segment of the tape and

immediately deposit it upon the surface of the record sheet. In the process of performing this function, the record sheet is shiftable in both the lateral and longitudinal directions until that surface portion of the sheet to which a segment of the



tape is to be mounted is to be mounted is arranged directly under the punch, at which time the punch may be actuated either electrically, mechanically, or manually, to sever the tape and immediately affix that severed segment to the record sheet.

3,755,048

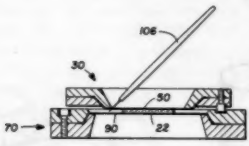
APPARATUS FOR USE IN SEMICONDUCTOR CLEANING AND TRANSFERRING PROCESSES

Wolfgang Curt Schubert, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 3, 1970, Ser. No. 25,491

Int. Cl. B23q *3/00*; **H01r** *43/00*

U.S. Cl. 156—541 **4 Claims**



In a method of cleaning and transferring semiconductors, a paper chip transfer member is glued to a plurality of beam lead chips while the chips are secured to a saphire disk by a layer of wax. Then, the wax is melted to release the chips, and the chips are cleaned by immersing the chips and the transfer member in a wax solvent. After the cleaning step, the chips are secured to a polyester chip receiving member by the simultaneous application of heat and pressure. The transfer member is then released from the chips by immersing the transfer member, the chips and the receiving member in a glue solvent. Finally, the chips are cleaned by immersing the chips and the receiving member in another solvent.

3,755,049

DEVICE FOR REMOVING TWO THIN LAYERS SITUATED ON EACH OTHER

Arnoldus Willem Jan Leloux, Dedemsvaart, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Filed Sept. 24, 1971, Ser. No. 183,320

Claims priority, application Netherlands, Sept. 30, 1970, 7014402

Int. Cl. B32b *35/00*; **B23p** *19/04*

U.S. Cl. 156—584 **4 Claims**

A device for removing two thin flexible thermoplastic layers of a tubular foil from each other comprising a first elongated member with a W-shaped cross section and a second elongated complementary member with a W-shaped cross section, whereby both members have a first aperture lying opposite each other in the cooperative state of the members, each member being provided with a second opening being situated

at different sides of the first aperture, the lower of the elongated members for supporting the foil having a projecting elongation.

3,755,050

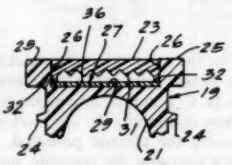
REFLECTIVE BICYCLE PEDAL TREAD

Gerald Golden, Highland Park; Charles V. Wrobel, Jr., Arlington Heights, and Walter Dian, Downers Grove, all of Ill., assignors to Excel Incorporated, Franklin Park, Ill.

Filed May 4, 1971, Ser. No. 140,148

Int. Cl. G05g *1/14*

U.S. Cl. 161—2 **2 Claims**



Reflective type of bicycle pedal tread having an outwardly facing plane surface extending along the pedal tread and an acrylic plastic reflector of the reflex type extending along the surface, and maintained in position on the surface with its reflective surface exposed for the entire length of the reflector. The reflector is sealed by a plastic sealing strip one form of which may be made from an acrylonitrile-butadiene-styrene copolymer, and capable of sealing the reflector and extruded with the pedal tread during extruding of the vinyl pedal tread to be a part of the pedal tread.

3,755,051

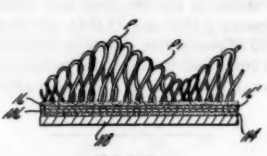
HIGH-LOFT, NONWOVEN PANELING MATERIAL AND COVERING

Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 78,004, Oct. 5, 1970, Pat. No. 3,705,063. This application June 12, 1972, Ser. No. 261,695

Int. Cl. D04h *3/00, 11/00*

U.S. Cl. 161—63 **20 Claims**



A paneling material comprising a laminated construction having a layer of adhesive and a multiplicity of elements looped outwardly from the layer and a layer of nonflexible material, such as plywood, plastic or the like, laminated to the adhesive layer; and a method of making the paneling material by first embedding a web of elements in an open pattern of adhesive, bonding the elements in the adhesive, consolidating the adhesive into a continuous backing layer while looping the

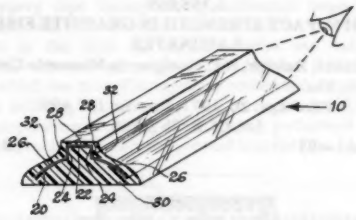
elements outwardly from the adhesive backing, and laminating the nonflexible material to the adhesive backing. In certain instances, a second pattern of adhesive may be applied to the first pattern of adhesive in general registry therewith prior to the consolidation step. Also a barrier layer may be interposed between the nonflexible material and the adhesive backing. Also, the invention includes a new use for a high-loft nonwoven material, namely: as a wall covering material.

3,755,052

DECORATIVE PLASTIC TRIM STRIP

Max Dressler, Glencoe, Ill., assignor to Protective Treatments, Inc., Dayton, Ohio

Filed May 10, 1971, Ser. No. 141,829
Int. Cl. B44f 1/02; B32b 15/08
U.S. Cl. 161—4 3 Claims



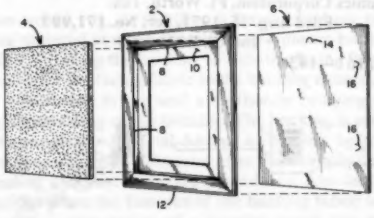
A decorative plastic trim strip in which a formed metal surfaced foil is embedded in a light-transmitting plastic sheath. The foil is provided with a colorant stripe on part of its surface to produce contrasting color effects. The surface of the plastic sheath is shaped differently from the confronting surface of the formed foil to change the apparent width of the foil when viewed through the sheath.

3,755,053

DECORATIVE PANEL FOR USE AS A BULLETIN BOARD OR DISPLAY PANEL

David K. Lindahl, St. Paul, Minn., assignor to Romac Industries, Inc., Minneapolis, Minn.

Filed May 17, 1971, Ser. No. 144,087
Int. Cl. B32b 1/04; E04c 2/20
U.S. Cl. 161—44 8 Claims



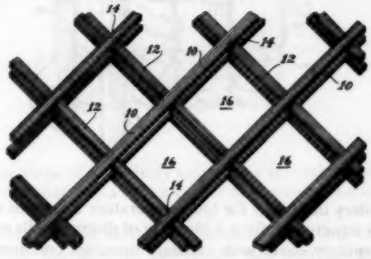
A decorative panel for use as a bulletin board or as a display panel on which decorative objects may be placed. The device is light weight and sturdy yet is economical to construct and is attractively designed. In the preferred embodiment, the frame is formed of plastic and is of unitary construction and has a first wall about the inner periphery of one side thereof formed by recessed shoulders and a second wall projecting from the outer periphery of the other side thereof and extending beyond said recessed shoulders. A burnt cork panel board is glued within the confines of said first wall to the front side of said recessed shoulders. The burnt cork panel board has a thickness equal to or less than the depth of said recessed shoulders in order to prevent damage to the edges thereof when the board is being handled. A cardboard backing is glued within the confines of the second projecting wall to the back side of said recessed shoulders to provide stability to the board.

3,755,054

RESIN BONDED GLASS FIBER FENCE

Jonas Medney, 3504 Woodward St., Oceanside, N.Y.

Continuation of Ser. No. 780,014, Nov. 29, 1968, abandoned.
This application July 19, 1971, Ser. No. 163,992
Int. Cl. B32b 5/12
U.S. Cl. 161—57 1 Claim



An interlocked glass fiber structure suitable for use as a fence material is disclosed.

3,755,055

NON-WOVEN NEEDLED PILE FABRIC AND METHOD FOR ITS MANUFACTURE

Herbert Lochner, Kempen, Germany, assignor to Cik Chemische Industrie Kempen GmbH

Filed Feb. 22, 1971, Ser. No. 117,626
Claims priority, application Germany, Feb. 24, 1970, P 20 08 439.3
Int. Cl. D04h 11/00
U.S. Cl. 161—62 5 Claims

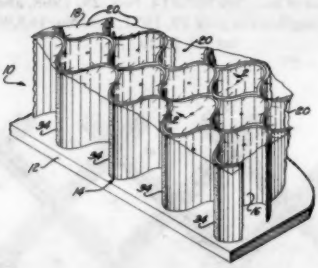
A needled, non-woven pile fabric comprises a non-woven backing fabric and a non-woven face fabric. The face fabric has its face side printed with an ornamental pattern of pigment color. The backing fabric and the face fabric are needled together so that the fibers of the backing fabric penetrate through the face fabric and mingle with the fibers of the face fabric to form a pile on the face side of the face fabric. The ornamental pattern is thereby imparted with a soft three-dimensional appearance.

A method is also disclosed for producing the non-woven pile fabric. According to the method, a web of a non-woven backing fabric is placed in face-to face relationship with a web of non-woven face fabric having a decorative pattern of pigment color printed on its face side, with the printed face side of the face fabric facing away from the backing fabric. The two webs are then needled from the free or uncovered side of the backing fabric in a direction towards the face side of the face fabric so that the fibers of the backing fabric penetrate through the face fabric and mingle with the fibers of the printed face fabric to form a pile layer on the printed face side. The backing fabric and the face fabric may be of a single color or of blended colors.

3,755,056
CELLULAR INSULATION FOR USE WITH LOW TEMPERATURE LIQUIDS

Jay L. McGrew, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,400
Int. Cl. B32b *3/02, 3/12;* **B65d** *25/18*
U.S. Cl. 161—68 **7 Claims**

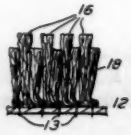


Capillary insulation for low temperature liquids in which a cellular structure defines a plurality of discrete cells enclosed by a capillary cover with capillary openings communicating with each cell. The cell walls and the cover are designed to minimize the effects of strains imposed thereon by providing an excess of material both in the walls and the cover thereby permitting them to deflect without adversely affecting operation of the insulation. The cell walls are formed in an S-shaped configuration and the cover is dimpled to provide the desired excess material. The capillary openings are reinforced by a toroidal rib extending around each opening.

3,755,057
SYNTHETIC FUR

Howard L. Scott, 56th St. and Lancaster Ave., Philadelphia, Pa.

Filed Aug. 23, 1971, Ser. No. 173,885
Int. Cl. D03d *27/00;* **D04h** *11/00*
U.S. Cl. 161—67 **6 Claims**



A synthetic fur product and method of making such product which comprises coating synthetic hair fibers with a heat-settable composition containing a hardening and adhesive agent in aqueous media, either with or without the addition of separate water-proofing agents, flame-retardant agents, softening agents, and the like, and then applying heat to the coated hair to set the coated hair in the selected condition. Then the treated hair fibers are formed into long and short hair wefts, the two lengths and "belly" hair. The wefts are then stitched or otherwise adhered to a backer. In another form, only one length of hair fiber is used to form the wefts and these are stitched to a woven mat which has been treated similarly to the wefts.

3,755,058
CARPET SEAMING TAPE

Alexander Winkler, North Hollywood, Calif., assignor to Bruck Industries, Inc., Los Angeles, Calif.

Filed June 11, 1970, Ser. No. 45,432
Int. Cl. B32b *15/02*
U.S. Cl. 161—88 **8 Claims**

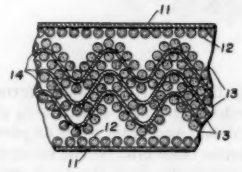
A carpet seaming tape comprising a tape base with yarns thereon and having a layer of adhesive thereover with a plurality of spaced apart rows of adhesive formed thereon and extending longitudinally along the tape. The yarns have a heat sealant emulsion rolled onto their backs. The layer and rows of adhesive are melted upon the application of heat, and the

heat sealant maintains the adhesive above the tape base so as to be available for securement to the carpet. The backs of two adjacent portions of carpet are then pressed against the tape and are bonded thereto providing a seamless appearance.

3,755,059
HIGH IMPACT STRENGTH IN GRAPHITE FIBER LAMINATES

John D. Calfee, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1971, Ser. No. 137,499
Int. Cl. B32b *15/00*
U.S. Cl. 161—93 **8 Claims**

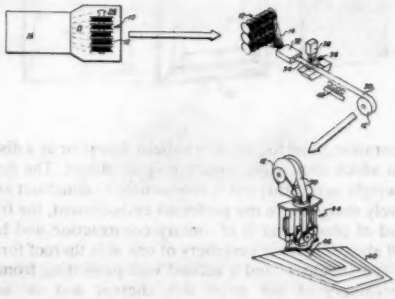


A laminar composite of high impact and shearing resistance comprises layers of graphite fiber, glass fiber, and corrugated metal foil in an arrangement which resists spalling, interlaminar shearing, and multipoint failure due to shock wave transmission.

3,755,060
STRUCTURAL SHAPES HAVING IMPROVED PHYSICAL PROPERTIES

Ronald E. Bullock, Fort Worth, Tex., assignor to General Dynamics Corporation, Ft. Worth, Tex.

Filed Aug. 16, 1971, Ser. No. 171,993
Int. Cl. B32b *3/00*
U.S. Cl. 161—143 **2 Claims**

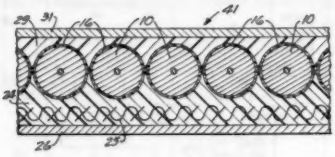


A method is disclosed for the fabrication of highly strengthened structural shapes and tectonic components which are particularly useful in the construction of aircraft, missiles and aerospace vehicles.

3,755,061
PREPREG TAPE

Joseph N. Schurb, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 649,167, June 27, 1967, abandoned. This application Oct. 12, 1970, Ser. No. 80,207
Int. Cl. B32b 5/08; D04h 5/00
U.S. Cl. 161—143 7 Claims

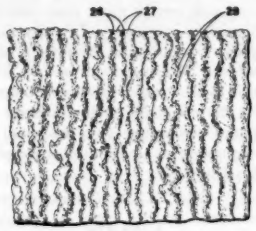


A prepreg tape incorporating collimated large-diameter monofilaments, such as boron monofilaments. Prior to incorporation in the tape the monofilaments are individually precoated with resin composition that does not flow when the tape in which the monofilaments are embedded is subjected to a useful molding operation. In one embodiment, the matrix resin composition of the tape comprises a preformed film and the coated monofilaments are pressed into the film.

3,755,062
FABRIC FORMED BY HEAT SEALING, SHRINKING AND FOAMING BACKING

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed July 21, 1971, Ser. No. 164,549
Int. Cl. B32b 7/04, 3/00
U.S. Cl. 161—146 2 Claims



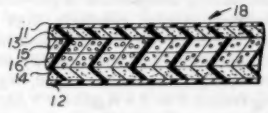
A non-woven rug, or the like, is formed by heat sealing a covering material at spaced intervals to a plastic backing and thereafter shrinking the backing to bulk the facing fabric. The heat sealing of the facing fabric to the backing causes a partial loss of orientation in the seal area therein bringing about a bulking or crinkling of the backing. The backing is preferably of a thermoplastic material having a foaming agent incorporated therein which is foamed after the completion of the heat sealing and heat shrinking procedures. Also included in the disclosure are the features of the backing fabric independently, i.e., incorporation of a foaming agent into a plastic which is extruded and thereafter heat sealed and/or stretch oriented and shrunk prior to the activation of the foaming agent to foam the fabric.

3,755,063
THERMOFORMABLE LAMINATED STRUCTURES

David H. Massey, Glencoe, Ill., and Robert B. Anderson, Edina, Minn., assignors to Xox Corporation, Lombard, Ill.

Continuation-in-part of Ser. No. 796,738, Feb. 5, 1969, abandoned. This application Mar. 9, 1970, Ser. No. 17,573
Int. Cl. B32b 5/18, 3/00
U.S. Cl. 161—161 8 Claims

A thermoformable essentially rigid structural sandwich laminate of thermoplastic polymeric material having a cellular core member and a pair of exterior non-cellular skin members of thermoplastic material of normal density adhesively united to the surfaces of the core member, wherein each of the elements which form the skin and core members respectively maintain their structural integrity within the laminate in subsequent thermoforming. The cellular core member may be either a single element or may be formed of a plurality of elements or laminae each of which may be of the same or of different densities. A process of preparing the thermoformable laminate is provided which comprises adhesively uniting and adhering to the outer planar surfaces of the cellular core member, sheets of non-cellular thermoplastic material and includes the steps of adhesively uniting the several elements or laminae that make up a core member of a composite construction.



The invention also relates to a process for the manufacture of relatively rigid formed items from said laminate by thermoforming of the aforesaid laminate by the application of heat under controlled conditions followed by the application of differential pressure to said laminate, the heat being applied through the exterior non-cellular thermoplastic surfaces of the laminate to modify the thickness, density and cell structure of the cellular core member under controlled thermoforming conditions.

3,755,064
WATER INSOLUBLE POLYMERIC WEB STRUCTURES AND FILAMENTS CONTAINING ENCAPSULATED COMPONENTS

Theodore Maierson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 723,285, April 22, 1968, which is a continuation of Ser. No. 659,857, Aug. 11, 1967, abandoned. This application May 25, 1971, Ser. No. 146,804
Int. Cl. D01f 1/02; D04h 1/04; B01j 13/00
U.S. Cl. 161—174 10 Claims

The present disclosure is directed to formation of self-supporting, three dimensional, water-insoluble, polymeric web structures containing encapsulated components. The webs are composed of randomly associated joined monofilaments of water-insoluble polymers, said monofilaments ranging in average diameter from about 1 to 10 microns, usually from about 2 to 7 microns, on/or in which are located encapsulated components, e.g., coloring agents, perfumes, or other scents, e.g. insect sex attractants, agricultural chemicals, insecticides, pesticides, etc. Any water-insoluble web-forming polymer, including compatible polymer mixtures, can be used provided that said polymers are capable of having a self-supporting web structure, the randomly associated individual monofilaments of which are self-supporting when spanning a gap of at least 1 inch. The web-forming polymer solutions or dispersions can be dispensed from various types of dispensing systems and equipment, e.g., from spray guns, portable aerosol cans, etc., to provide a novel and advantageous way of dispensing agricultural treating agents or other encapsulated materials onto plants or other desired repositories or locations without interfering therewith, viz., with plant growth or metabolic processes thereof. cesses thereof.

According to a preferred embodiment, the disclosure is also directed to aerosolizable formulations comprised of the polymer (or polymers) forming the web structure, a solvent (or mixture of solvents) used to dissolve the polymer, a propellent (or mixture of propellents) to propel the polymer solution from the aerosol dispensing device, and the encapsulated material which becomes imbedded in or adherent to the

polymeric filaments upon formation of the web. Other optional ingredients, e.g., a plasticizer(s) can be included in the aerosolizable formulations to impart increased tackiness to the web over extended time periods.

3,755,065

OXIDIC SOLDER SEALING COMPOSITIONS AND THEIR USE IN FORMING LAMINATES

Theodor L. Chvatal, Vienna, Austria, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 11, 1971, Ser. No. 142,399
Int. Cl. C03c *27/00;* **C09j** *1/00;* **B32b** *17/06*
U.S. Cl. 161—192 **13 Claims**

An oxidic solder sealing composition is provided which is suitable for selectively joining relatively high expansion glasses, ceramics and metals to each other and in combination. The solder compositions comprise a binary admixture of vanadium pentoxide, V_2O_5, and silver oxide, Ag_2O, in the mole ratio ranging from 0.3 to 3.5 Ag_2O:1.0 V_2O_5, and more particularly in the molar ratio of 0.5 to 3.0 Ag_2O:1.0 V_2O_5. These solder compositions may be used in the form of rods, frit or powder, paste with conventional fugitive binders or solvents or as an aqueous suspension, such as in concentrated ammonia. In preparing these compositions, $AgNO_3$ is mixed with finely divided V_2O_5 and then the two components are fused together. Subsequently, the fused mass is cooled and thereafter may be ground into a powder. Laminates and sealed surfaces are prepared from the binary solder compositions.

3,755,066

BONDING

Alan D. Rose, Oadby, England, assignor to Bitumen Industries Limited, Slough, Buckinghamshire, England

Division of Ser. No. 796,447, Feb. 4, 1969, Pat. No. 3,574,024, which is a continuation-in-part of Ser. No. 531,599, March 3, 1966, abandoned, which is a continuation-in-part of Ser. No. 359,097, April 13, 1964, abandoned. This application May 21, 1970, Ser. No. 48,601
Int. Cl. B32b *15/04;* **H05b** *3/10, 3/54*
U.S. Cl. 161—217 **6 Claims**

This invention relates to a means for bonding windows into automobile bodies. A bonding strip comprising a curable synthetic polymeric material having an electrical conductor running therethrough is used.

3,755,067

ASBESTOS FIBER EXTENDED PHENOLIC ADHESIVES

Adolph Schnabel, Ringoes, N.J., assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Oct. 13, 1971, Ser. No. 189,001
Int. Cl. B32b *21/02;* **C08g** *51/24, 51/18*
U.S. Cl. 161—262 **10 Claims**

Processed asbestos fiber is utilized as a viscosity and thixotropy control agent in an improved water-resistant phenolic resin, wood laminating adhesive. An alkaline catalyst, pressure-digested lignocellulose and secondary extenders such as wheat flour may also be incorporated in the composition.

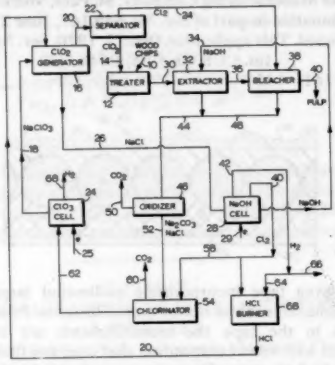
3,755,068

REGENERATION OF CHLORINE DIOXIDE FOR PULP TREATMENT

William H. Rapson, Scarborough, Ontario, Canada, assignor to Erco Envirotcch Ltd., Islington, Ontario, Canada

Filed Feb. 26, 1971, Ser. No. 119,294
Int. Cl. D21c *11/00, 11/12*
U.S. Cl. 162—30 **31 Claims**

Alkali metal carbonate in aqueous solutions of alkali metal carbonate and alkali metal chloride is chlorinated using chlorine or hydrogen chloride. A typical aqueous solution is oxidized waste pulping and bleaching liquor from a process for pulping cellulosic fibrous material using a chlorine dioxide treatment followed by sodium hydroxide. Another typical aqueous solution is that formed from the precipitate of



evaporation of a white liquor obtained in a Kraft recovery operation.

3,755,069

HIGHLY STABLE RESIN COATED PAPER PRODUCTS AND METHOD OF MAKING SAME

Irvin H. Crawford, Hamlin; Roger E. Democh, and Robert J. Baron, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1970, Ser. No. 98,055
Int. Cl. D21h *1/34*
U.S. Cl. 162—135 **6 Claims**

Novel high stability resin coated paper products comprising a core or base of resin stabilizer and/or antioxidant containing paper overcoated with one or more conventional resin layers which are stabilized by migration of the stabilizer or antioxidant from the paper core into the resin layers after application thereof are disclosed. An improved process for making such highly stable resin coated paper products comprising the steps of incorporating the migrating resin stabilizer or antioxidant into the paper core or coating it on the paper core and subsequently overcoating the same with conventional resinous overlayers is also disclosed.

3,755,070

PAPER SIZED WITH CARBOXY-FUNCTIONAL SILICONES

Alvin E. Bey, and James R. Heffel, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 847,742, Aug. 5, 1969. This application Aug. 19, 1971, Ser. No. 173,280
Int. Cl. D21h *3/62*
U.S. Cl. 162—164 **6 Claims**

A sizing agent for paper is disclosed which is a siloxane copolymer containing about 0.1 to 50 mole percent of carboxy-functional siloxane units. Paper sized with this siloxane has enhanced resistance to wetting. Sizing can be accomplished by either internal sizing processes (wet end) or surface sizing processes (dry end).

3,755,071

PAPER SIZED WITH CARBOXY-FUNCTIONAL SILICONES

Alvin E. Bey, and James R. Heffel, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 847,742, Aug. 5, 1969. This application Aug. 19, 1971, Ser. No. 173,279
Int. Cl. D21d *3/00;* **D21h** *3/62*
U.S. Cl. 162—184 **3 Claims**

A sizing agent for paper is disclosed which is a siloxane copolymer containing about 0.1 to 50 mole percent of carbox-

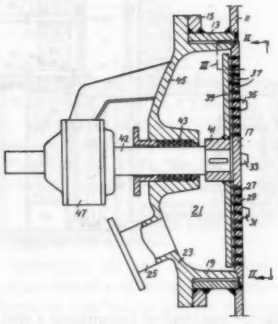
y-functional siloxane units. Paper sized with this siloxane has enhanced resistance to wetting. Sizing can be accomplished by either internal sizing processes (wet end) or surface sizing processes (dry end).

3,755,072

STRAINER DEVICE FOR CELLULOSE DIGESTER

Bengt Sven Erik Ostberg, and Gustav Hilding Ortqvist, both of Karlstad, Sweden, assignors to Kamyr Aktiebolag, Karlstad, Sweden

Filed Oct. 23, 1970, Ser. No. 83,459
Int. Cl. D21c 7/14
U.S. Cl. 162—251 4 Claims



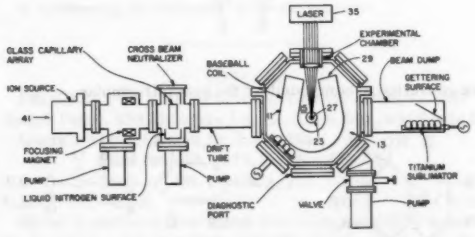
A strainer device for separating liquid from a suspension of fibrous material in a cellulose digester. The strainer plate consists of flat annular members separated by concentric slots. Rhombic shaped cleaning members attached to a rotary shaft move in the slots to keep them open and push back particles tending to clog them.

3,755,073

HYBRID LASER PLASMA TARGET - NEUTRAL BEAM INJECTION FUSION SYSTEM

Alan F. Haught; Donald H. Polk, both of Glastonbury; James C. Woo, Andover, and Walter J. Fader, Glastonbury, all of Conn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 21, 1971, Ser. No. 155,012
Int. Cl. G21b 1/02
U.S. Cl. 176—1 14 Claims



This invention relates to a method for creating a high density plasma by heating in a vacuum a pellet located within a magnetic field to produce a dense, magnetically confined, relatively warm plasma of ions and electrons, and injecting thereinto an energetic neutral beam to form a high temperature, stable, magnetically confined, steady-state plasma.

3,755,074

METHOD FOR SEPARATING PARTICLES

Sidney Langer, San Diego(La Jolla), Calif., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1968, Ser. No. 724,244
Int. Cl. G21c 19/34, 19/44
U.S. Cl. 176—16 7 Claims

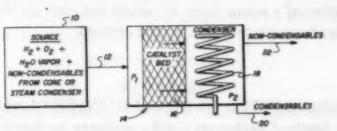
A method for fueling nuclear reactors and thereafter separating groups of irradiated fuel prior to reprocessing of the groups. The method includes forming at least two groups of nuclear fuel particles. At least one of the groups is then coated with pyrocarbon while the remaining groups of particles are coated with material which includes a layer of silicon carbide. The coated groups of particles are then mixed with graphite and a graphite matrix fuel body is formed. A nuclear reactor is fueled with the fuel body and the fuel body is removed from the reactor after being irradiated. The fuel body is then exposed to oxidizing conditions sufficient to oxidize the graphite matrix and the pyrocarbon coating of one group without oxidizing the silicon carbide layer of the other groups. The intact silicon carbide groups of particles are then separated from the other groups of particles for reprocessing apart from the other groups of particles.

3,755,075

CONDENSER-TYPE GAS COMBINER

James O. Henrie, Hidden Hills, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 25, 1970, Ser. No. 22,633
Int. Cl. B01j 9/02
U.S. Cl. 176—37 8 Claims



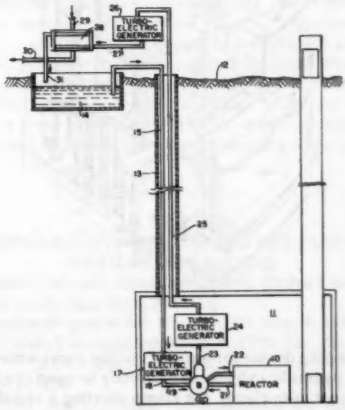
A condenser-type gas combiner, intended primarily for use with nuclear reactors, wherein hydrogen and oxygen are recombined at low pressures using a condenser as a driving force to transport the hydrogen and oxygen gases through a catalytic bed.

3,755,076

NUCLEAR POWERED ENERGY CONVERSION SYSTEM

Thayer Lindsley, 660 Madison Ave., New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,572
Int. Cl. G21d 5/00
U.S. Cl. 176—39 3 Claims



An energy recovery system employing a remotely positioned underground nuclear generator and associated heat and hydrodynamic conversion means.

3,755,077

NUCLEAR FUEL ASSEMBLY

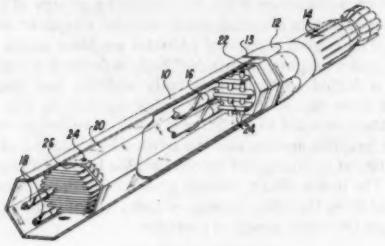
Jean-Claude Agranier, Cornillon-Confoux, and Andre Chalony, Aix-en-Provence, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Sept. 14, 1970, Ser. No. 71,998

Claims priority, application France, Sept. 17, 1969, 6931617

Int. Cl. G21c *3/32*

U.S. Cl. 176—78 5 Claims



A fastening system for retaining a compact bundle of fuel pins longitudinally in the fluid coolant guide shroud of a nuclear fuel assembly comprises two parallel rods attached transversely to a tube retained by the shroud and contained therein, parallel rails which slide on the rods and split tubes which each slide on a rail and slide thereon and in the plugs of the fuel pins of a same layer to retain the pins on the rail. The guide members are retained by the shroud.

3,755,078

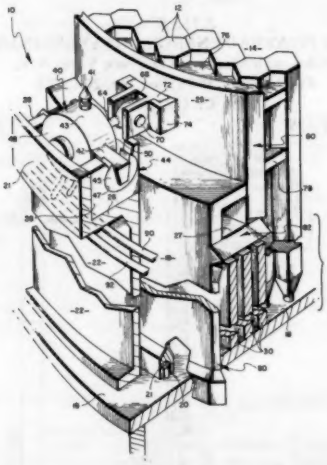
SEGMENTED HYDRAULIC CORE CLAMP

Allen M. Stelle, Calabasas, Calif., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 27, 1971, Ser. No. 211,900

Int. Cl. G21c

U.S. Cl. 176—87 10 Claims



A clamping device for nuclear reactor cores wherein a plurality of hydraulic cylinders act directly to open or close a tilting segment core clamp, the clamp exerting a radial inwardly directed force of constant magnitude on the reactor core yet is releasable upon reversing the direction of fluid on a piston within the hydraulic cylinders thereby releasing the fuel elements within the core.

3,755,079

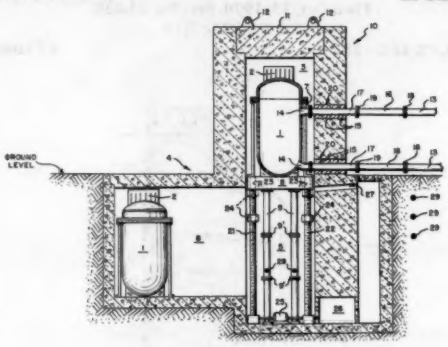
NUCLEAR REACTOR PLANT WITH INTEGRAL ENTOMBMENT

Albert A. Weinstein, Bronx, N.Y.; Fernand R. Nakache, Palos Verdes Estates, Calif., and Harry Soodak, Hastings-on-Hudson, N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 12, 1969, Ser. No. 884,408

Int. Cl. G21c *13/00*

U.S. Cl. 176—87 21 Claims



A nuclear reactor installation comprising a shield structure having a reactor chamber and a burial chamber communicating with the reactor chamber, and means operating within the shield structure for moving the pressure vessel at the expiration of its operational life from the reactor chamber into the burial chamber.

3,755,080

MICROBIAL CONVERSION OF NAPHTHALENE BASE HYDROCARBONS

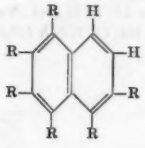
Eugene H. Wegner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 697,598, Jan. 18, 1968, abandoned. This application Aug. 24, 1970, Ser. No. 66,629

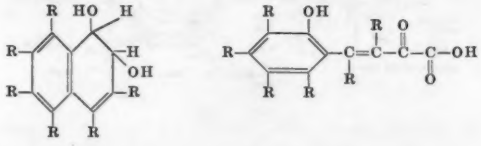
Int. Cl. C12d *1/00*

U.S. Cl. 195—28 R 6 Claims

Naphthalene base hydrocarbons of the general formula



are converted to compounds of the general formulas



wherein each R is selected from hydrogen, methyl and ethyl radicals, by contacting said hydrocarbon with an aqueous metal salts medium containing Nocardia species bacteria ssigned the numerical designation NRRL 3385 in the presence of an oxygen source.

3,755,081
PROCESS FOR PREPARING L-SERINE
Hideaki Yamade, Kyoto, Japan, assignor to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Feb. 19, 1971, Ser. No. 117,124
Claims priority, application Japan, May 6, 1970, 45/37923
Int. Cl. C12d *1/00, 13/06*
U.S. Cl. 195—29 13 Claims

The present invention relates to a process for synthesizing L-serine. More particularly, the present invention relates to a process for preparing L-serine, which is characterized by condensing glycine and formaldehyde in the presence of threonine-aldolase (E.C. 4.1.2.5) derived from a microorganism.

3,755,082
METHANOL-ASSIMILATING PROPAGATION OF MICROBIAL CELLS
Gyozo Terui; Nobuo Takada, and Hidekazu Sawada, all of Osaka, Japan, assignors to Gyozo Terui, Osaka, Japan
Filed Nov. 10, 1971, Ser. No. 197,437
Claims priority, application Japan, Dec. 11, 1970, 45/110957
Int. Cl. C12b *1/00*
U.S. Cl. 195—49 5 Claims

A strain belonging to the new species *Pseudomonas methanolica* is aerobically cultured in a nutrient medium containing methanol as a substrate and the propagated microbial cells are recovered from the culture liquor.

3,755,083
METHOD FOR RECOVERING UROKINASE FROM URINE CONTAINING THE SAME
Leo J. Novak, New Carlisle, Ohio, assignor to Rand Laboratories, Inc., Metairie, La.
Filed Aug. 30, 1971, Ser. No. 176,315
Int. Cl. C07g *7/026*
U.S. Cl. 195—66 B 8 Claims

A method for recovering urokinase from urine containing the same is disclosed which comprises:

a. forming a slurry of the urine at a pH between about 3.0 and 6.0 with a non-reactive, water insoluble mineral adsorbant having a large particle surface area and a surface pH between about 3.0 and 5.5;
b. recovering the urokinase-containing adsorbant from the slurry;
c. recovering the urokinase from the urokinase-containing adsorbant in the form of an aqueous solution of urokinase; and
d. recovering the urokinase from the solution.

3,755,084
PROCESS FOR THE PREPARATION OF APOENZYME
Joseph Feder, 935 Mulberry Ln., St. Louis, Mo., and Linda R. Garrett, 110 E. Clinton, St. Louis, Mo.
Filed June 23, 1971, Ser. No. 156,129
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R 8 Claims

Metal is removed from metal containing (metallo) enzyme by providing a solution of the metallo enzyme and a chelating agent for the metal of the metallo enzyme, passing the solution through a column of a hydrophilic, water insoluble, cross-linked dextran polymer gel, which gel retards the passage of metal-chelating agent complex but does not retard the passage of enzyme and recovering enzyme substantially free from metal. Metallo enzymes which can be employed are protease enzyme such as neutral protease obtained from bacillus organisms. Suitable chelating agents include 1,10-phenanthroline.

3,755,085
PREVENTION OF ENZYME DEACTIVATION BY CHLORINE
Fred Tivin, Springfield Twp., and Eugene Zeffren, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 30, 1970, Ser. No. 76,994
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 2 Claims

Enzyme deactivation during fabric laundering in water is prevented by using the enzyme in combination with a chlorine scavenger which is capable of reacting with residual chlorine in the water.

3,755,086
DIAGNOSTIC METHOD UTILIZING SYNTHETIC DEOXYRILIONUCLEOTIDE OLIGOMER TEMPLATE
Edgar Philip Heimer, Cedar Grove, N.J., assignor to Hoffmann-LaRoche, Inc., Nutley, N.J.
Filed Feb. 9, 1971, Ser. No. 114,059
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R 11 Claims

A diagnostic method for the detection of virus-related neoplastic disease states is described. This method involves employing synthetic nucleotide oligomers hybridized with RNA-type polymers as a template for assaying RNA-dependent DNA polymerase activity. RNA-dependent DNA polymerase activity has been found to be specifically characteristic of several neoplastic disease states including human leukemia. In a preferred embodiment the instant method employs synthetic thymidylic acid oligomers (d-pT) hybridized with polymeric ribonucleotide rA.

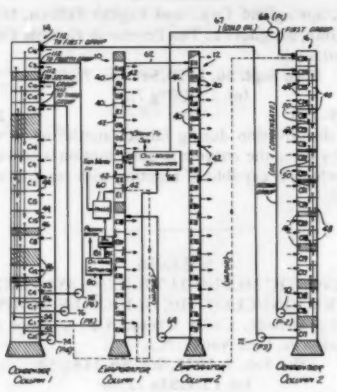
3,755,087
COMBINATION OCTANE NUMBER CONTROL OF DISTILLATION COLUMN OVERHEAD AND BLENDING CONTROL
Walter A. Bajek, Lombard, and James H. McLaughlin, LaGrange, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 868,459, Oct. 22, 1969, Pat. No. 3,647,635. This application Dec. 22, 1971, Ser. No. 210,943.
The portion of the term of this patent subsequent to Mar. 7, 1989, has been disclaimed.
Int. Cl. B01d *3/42*
U.S. Cl. 196—100 18 Claims

A fractional distillation column operating as gasoline splitter is controlled by measuring the octane number of the column overhead fraction and adjusting the reflux to the column in response to the octane number. The octane measurement is effected by an analyzer comprising a stabilized cool flame generator with servo-positioned flame front which provides a real time output signal indicative of a sample octane number. The output signal is utilized to control reflux to maintain a given octane number in the overhead and to provide a control means for downstream blending of the overhead make.

3,755,088
INTERNALLY INTERCONNECTED MULTI-STAGE DISTILLATION SYSTEM
Asriel Osdor, Tel Aviv, Israel, assignor to Hydro Chemical & Mineral Corp., New York, N.Y.
Continuation-in-part of Ser. No. 847,103, Aug. 4, 1969, Pat. No. 3,627,646. This application Dec. 4, 1970, Ser. No. 95,215
Int. Cl. B01d *1/22, 1/26, 3/00, 3/10*
U.S. Cl. 202—173 14 Claims

Evaporator and condenser arrangements for multi-stage systems formed from continuous tubular columns and transverse plates. In the condensers, elongated partition plates cooperate with segments of the column wall to define internal liquid passageways between spaced condensers. In the

evaporators, the transverse plates are shaped to define wells and trap forming partitions. Arrangements are described for



achieving interspersal of condenser groups with minimum pumping and minimum use of column height.

3,755,089

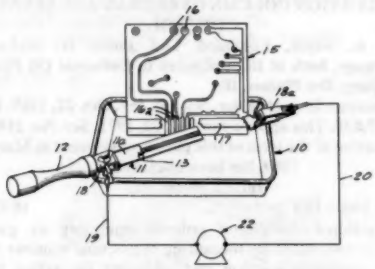
METHOD OF GOLD PLATING

Felix R. Rapids, Chicago, Ill., assignor to Rapid Electroplating Process, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 2,982, Jan. 15, 1970, abandoned. This application Nov. 18, 1971, Ser. No. 200,045

Int. Cl. C23b *5/48, 5/24*; **B23p** *1/02*

U.S. Cl. 204—15 **6 Claims**



Method of gold plating particularly suited for the gold plating of localized conductive areas such as contacts on printed circuit boards, wherein the surface to be plated is first cleaned and activated without any current being applied by rubbing onto said surface a non-displacement type of gold electrolyte solution carried by absorbent material forming part of a gold applicator assembly that includes a gold anode. A plating current is then passed through said electrolyte solution during continued rubbing to effect the plating of gold on said surface as the cathode. The preferred electrolyte is a water solution of an alkali metal gold cyanide containing substantially no free cyanide or alkali metal cyanide in excess of the cyanide bound to the gold present in said water solution. The method is self-indicating in that so long as the plating maintains a superficial dark or brownish coloration throughout the plating cycle, the gold electrodeposit is of satisfactory quality and is firmly adherent, whereas if the gold electrodeposit exhibits a clear gold color, or if no plating takes place, that indicates a poor or broken plating connection in the plating circuit. Rubbing of the electrodeposit with the applicator during the plating operation, if there are poor or broken plating connections, quickly removes the superficial dark coloration of the electrodeposit and imparts thereto a clear gold color of substantially the same clarity of gold color as that of the gold applicator used. If this occurs, it is only necessary to correct the bad plating connection and continue plating.

3,755,090

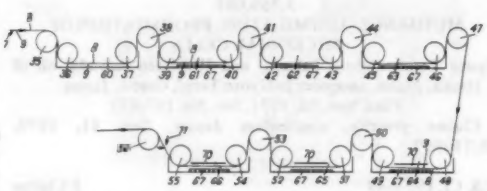
METHOD OF PROVIDING A SURFACE OF A STEEL SUBSTRATE WITH AN ALUMINUM COATING

Albert Edward Jackson, Gwernaffield Mold, and Ernest Wynne Williams, Mold, both of England, assignors to British Steel Corporation, London, England

Continuation-in-part of Ser. No. 814,145, April 7, 1969, abandoned. This application Mar. 27, 1972, Ser. No. 238,287

Int. Cl. C23b *5/52, 5/04*; **C23c** *7/00*

U.S. Cl. 204—34 **19 Claims**



The invention concerns a method of providing a surface of a steel substrate with an aluminum coating consisting essentially of the steps of electrolytically coating the said surface with a layer of iron, wetting the iron layer with a film of an aqueous solution consisting essentially of water and an alkali metal silicate, coating the said wetted layer of iron with a layer of aluminum powder which forms an alloy with the steel substrate when heat treated at a temperature of 502° – 600° C, compacting the said layers to the surface of the steel substrate at a temperature below the sintering temperature whereby the particles of aluminum powder in the compacted layer thereof are compacted to each other and to the steel substrate without sintering occurring, and heat treating the compacted steel substrate at a temperature of 502° – 600° C over a period of time whereby sintering and bonding of the particles to each other and to the steel substrate occurs, the said iron layer serving to control nucleation of said alloy during the heat treatment and having a thickness varying from a minimum of about 0.5 micron when the heat treatment is at 502° C to a minimum of about 3.5 microns when the heat treatment is at 600° C.

3,755,091

PROCESS FOR REDUCING DISCOLORATION OF ELECTROCHEMICALLY TREATED CHROMIUM PLATED FERROUS METAL STRIP

Lowell W. Austin, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed June 19, 1969, Ser. No. 834,872

Int. Cl. C32b *11/00*; **C23b** *5/48, 5/06*

U.S. Cl. 204—35 N **11 Claims**

Discoloration of ferrous metal strip electroplated with metallic chromium in a continuous electroplating line at high line speeds and then electrochemically treated to deposit a nonmetallic chromium containing film thereover is reduced by intimately contacting the metallic chromium plated strip with an aqueous solution of a water soluble hexavalent chromium compound prior to the electrochemical treatment. The aqueous solution preferably has a composition which is substantially the same as the chromium electroplating electrolyte. The invention is especially useful in producing tin free ferrous metal container stock having a composite protective coating including an undercoating of 0.1–0.5 microinch of metallic chromium and an overcoating containing chromium oxide.

3,755,092

METHOD OF INTRODUCING IMPURITIES INTO A LAYER OF BANDGAP MATERIAL IN A THIN-FILM SOLID STATE DEVICE

Jovan Antula, Munich, Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der, Goettingen, Germany

Filed Aug. 3, 1970, Ser. No. 60,531

Claims priority, application Germany, Aug. 1, 1969, P 19 39 267.7

Int. Cl. C23f *17/00*

U.S. Cl. 204—35 N 8 Claims

A method of manufacturing a thin-film solid state devices comprising a body of bandgap-material, preferably aluminium oxide, sandwiched between two conductive electrodes and containing between about $10^{18} - 10^{20}$ impurity atoms per cm^3, said impurity atoms being selected from the group of Cu, Cd, Zn, Ag, Ni, and I. The preferred method of manufacture comprises the steps of providing an electrically conductive substate, forming a layer of bandgap material on said substrate, said layer having an effective thickness between about 15 and 300 Angstrom units, introducing into said layer ions of said impurity material by exposing a surface of said layer opposite to said substrate to a fluid (which may be a liquid or a gas under reduced pressure) containing ions of said impurity material, applying a voltage across said layer, said voltage having a polarity and magnitude such that said ions are accelerated and drawn into said layer without forming a deposit of said impurity material on said expsoed surface, and providing electrodes on said substrate and said exposed surface.

3,755,093

METHOD FOR THE ANODIZATION AND RESIN-COATING OF ALUMINOUS ARTICLES

Yasuo Suematsu, Amagasaki, Japan, assignor to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Mar. 22, 1972, Ser. No. 236,988

Claims priority, application Japan, Mar. 31, 1971, 46/19523

Int. Cl. C23b *5/52, 9/02*

U.S. Cl. 204—37 R 11 Claims

A method for treating the surface of an aluminous article is provided which comprises conducting the electrolysis with the aluminous article as the anode and in a single electrolytic bath containing

1. at least one strong acid known per se for the anodization of an aluminous material;
2. at least one polybasic organic acid; and
3. at least one cationic type resin prepolymer or precondensate in an aqueous system wherein said cationic type resin prepolymer or precondensate is anionized at least partly, so that the anodization and electrodeposition of the resin prepolymer or precondensate are effected on the surface of the aluminous article in said single bath.

3,755,094

ANODE COMPOSITIONS

Edgar J. Seyb, Oak Park; Melvyn B. Kalt, Royal Oak, and Hyman Chessin, Birmingham, all of Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Division of Ser. No. 830,851, June 5, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,206

Int. Cl. C23b *5/06;* B01k *3/06*

U.S. Cl. 204—51 9 Claims

In accordance with certain of its aspects, this invention relates to novel processes and to a lead base alloy suitable for anode production consisting essentially of lead and tin and at least one metal selected from the group consisting of tellurium, thallium, and cadmium and containing 90–99 percent by weight of lead, 1–7 percent by weight of tin, and at least one metal selected from the group consisting of tellurium, thallium, and cadmium in an amount of 0.005–5.0 percent by weight sufficient to bring the total weight of the lead base alloy anode to 100 percent.

3,755,095

COMPOSITION AND METHOD FOR SUPPRESSING SPRAY IN ELECTROLYTIC PROCESS

William A. Boycott, Jr., Windsor, Ontario, Canada, assignor to Udylite Corporation, Warren, Mich.

Filed Mar. 29, 1971, Ser. No. 129,135

Int. Cl. C23b *5/06*

U.S. Cl. 204—51 7 Claims

A method for the electroplating of metals is described wherein incorporated into the plating bath is a sufficient amount of metallic ions to be electroplated and a quantity of hydrophilic particles sufficient to suppress spraying of electrolyte during electrolysis.

3,755,096

BRIGHT ACID TIN PLATING

Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

Filed July 1, 1971, Ser. No. 159,035

Int. Cl. C23b *5/14, 5/46*

U.S. Cl. 204—54 R 19 Claims

This invention relates to the electrodeposition of tin; acid tin plating compositions, acid tin plating baths; to processes for the electrodeposition of bright tin in the presence of glacial acrylic acid, at least one non-ionic alkoxylated wetting agent, and as a novel brightener, the reaction product of hexan-2,5-dione and a compound selected from the group consisting of homocyclic aromatic aldehydes and 5-membered ring heterocyclic aldehydes, wherein the aldehyde group is bonded directly to the aromatic ring, conjugated aromatic ring or 5-membered ring heterocyclic group, said ring or group being otherwise inertly substituted or unsubstituted; to said novel brighteners; and a method of producing said novel brighteners.

3,755,097

NOVEL PROCESS FOR ELECTRODEPOSITING ZINC

Richard P. Cope, Jr., New City, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,203

Int. Cl. C23b *5/10*

U.S. Cl. 204—55 Y 14 Claims

There is disclosed a process for electrodepositing zinc involving the use, as brightening additives, of complex mixtures containing salts of di-(1-benzyl-3-carboxyl-1,2-dihydropyridyl-2) ether and the salts of the corresponding sulfides and polysulfides. The use of the latter additives leads to the preparation of zinc coatings characterized by their excellent smoothness, brightness, luster and adherance.

3,755,098

CONTROL OF THE IMPURITY CONTENT OF ZINC SULPHATE SOLUTIONS

Graeme Alexander Major, and Ian George Matthew, both of Tasmania, Australia, assignors to Electrolytic Zinc Company of Australasia Limited, Melbourne, Victoria, Australia

Filed May 13, 1971, Ser. No. 143,195

Claims priority, application Australia, May 25, 1970, PA-1316

Int. Cl. C23b *5/12;* C22d *1/22*

U.S. Cl. 204—55 R 2 Claims

A process for controlling the build-up of undesirable ions in an electrolytic zinc plant circuit, comprises a step in which solution from said circuit is treated with a neutralising agent selected from the group consisting of limestone, calcium car-

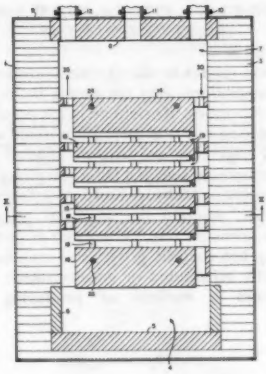
bonate, zinc oxide, calcined zinc sulphide, calcined zinc sulphide concentrate, ammonia, ammonium hydroxide, dolomite, lime, calcium oxide, and calcium hydroxide, at a temperature in the range 65° C to the boiling point of the solution at atmospheric pressure, so as to precipitate substantially the whole zinc content thereof in a form in which the content of said undesirable ions is substantially lowered; and a step in which the zinc values contained in the precipitated zinc compounds are returned to the said zinc plant circuit. The undesirable ions are selected from the group consisting of Cl^-, NO_3^-, NO_2^-, NH_4^+, ClO_4^-, ClO_3^-, and the ions of the elements Mn, Mg, Cd, Co, Ni, Na, K, Cr, V, Se, Te, Sn, As, Sb, In, and Fe.

3,755,099

LIGHT METAL PRODUCTION

Warren E. Haupin, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 8, 1971, Ser. No. 178,611
Int. Cl. C22d *3/00, 3/12, 3/08*
U.S. Cl. 204—64 R **10 Claims**



Aluminum or magnesium is produced electrolytically from the light metal chloride dissolved in molten halide of higher decomposition potential, in a cell which includes at least two opposed electrodes providing at least one inter-electrode space therebetween, while maintaining an effective anode-cathode distance less than ¾ inch.

3,755,100

METHOD FOR PRODUCING ACRYLAMIDE FROM ACRYLONITRILE

Donald G. Epple, Oaklawn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed June 9, 1972, Ser. No. 263,745
Int. Cl. C07b *29/06*; C07c *103/08, 103/12*
U.S. Cl. 204—74 **2 Claims**

Dilute aqueous solutions of acrylonitrile, the pH of which is adjusted to 10–14, may be electrolyzed using A.C. current and copper electrodes to produce acrylamide.

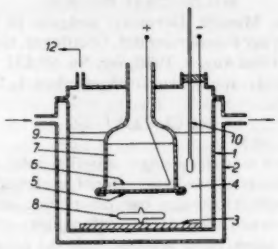
3,755,101

PROCESS FOR THE PREPARATION OF SALIGENOL

Michel Rakoutz, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 18, 1971, Ser. No. 200,050
Claims priority, application France, Nov. 19, 1970, 7041498
Int. Cl. C07b *29/06*; C07c *29/00*
U.S. Cl. 204—75 **8 Claims**

Saligenol is obtained by electrochemical reduction of salicylic acid in a cell in which the anolyte and catholyte are separated from each other by a cation exchange membrane



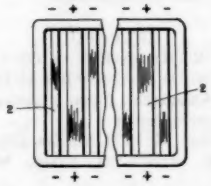
and in which the catholyte initially consists of water, a cosolvent, salicylic acid and a quaternary ammonium salt.

3,755,102

PROCESS FOR TREATING INDUSTRIAL WASTES

Simon Bastacky, 6604 Dalzell Pl., Pittsburgh, Pa.

Filed Mar. 20, 1970, Ser. No. 21,377
Int. Cl. C01g *1/02, 1/10*; B01k *3/06*
U.S. Cl. 204—92 **7 Claims**



A process for treating industrial wastes containing sulphuric acid and metal constituents comprising subjecting the wastes to a cell equipped with a plurality of alternately positioned positive and negative aluminum electrodes and charging the electrodes. A solid residue forms which can be further reduced by an ignition step. The aluminum electrodes are one of, or a combination of, rows of pipe, flat plates, or corrugated plates.

3,755,103

CONDITIONING DIAPHRAGMS IN CHLOR-ALKALI CELLS

Morris P. Grotheer, and Edward H. Cook, Jr., both of Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed July 30, 1971, Ser. No. 167,804
Int. Cl. C01d *1/06*
U.S. Cl. 204—98 **6 Claims**

An improved process is described for the production of alkali metal hydroxides and elemental chlorine which comprises passing substantially saturated sodium chlorine brine solutions through a diaphragm type chlor-alkali cell consisting essentially of a cell enclosure, an anode having an electrically active surface on an electrically conductive substrate metal, and a formaminous metal cathode, the anode and cathode being separated by porous diaphragm containing asbestos wherein the brine solution has been acidified to a pH of less than 2 and continuing the passage of the acidified brine into the cell at least until the hydrogen content of the chlorine produced at the anode is less than 0.5 percent by weight. The improved process results not only in purer chlorine product, but also

higher current efficiencies and maintainance of the desired head of anolyte liquor of more readily accomplished.

3,755,104
PROCESS FOR THE RECOVERY OF MOLYBDENUM AND RHENIUM FROM SULFIDES BY ELECTROLYTIC DISSOLUTION

Paul R. Kruesi, 14255 Braun Rd., Golden, Colo.

Filed Mar. 2, 1971, Ser. No. 120,339
Int. Cl. B01k *1/00*; **C22b** *3/00*
U.S. Cl. 204—94 **5 Claims**

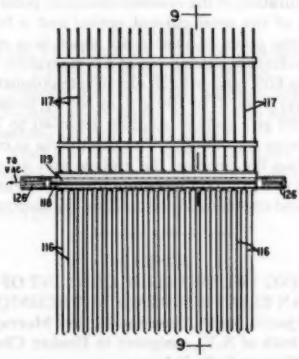
A pollution-free process for the dissolution in an acidic media of molybdenum sulfides with the formation of soluble molybdenum and rhenium ions followed by the recovery of these ions from solution in the electrolyte media, the process characterized by certain critical conditions, these being the use of:

1. an alkali metal and/or alkaline earth metal chloride electrolyte;
2. an acidity range of about 10 percent HCl to pH 2.5;
3. an electrolyte temperature range of about 50° C to 105° C; and
4. an anode current density up to about 500 amperes/ft².

3,755,105
VACUUM ELECTRICAL CONTACTS FOR USE IN ELECTROLYTIC CELLS

Georg Messner, Latemar Strasse 7, Munich, Germany

Filed June 28, 1971, Ser. No. 157,380
Int. Cl. C01b *11/26*
U.S. Cl. 204—95 **9 Claims**



Electrical contact is made between two electronic conductors by applying a vacuum on the spaces between the said electronic conductors, particularly useful when the conductors are made of different materials, and are used as mono and bipolar connectors in electrolys.s cells, and method of making good electrical connections between two metals.

3,755,106
ELECTROLYTIC OXIDATION OF SB_2S_3

Bernard J. Scheiner; Roald E. Lindstrom, both of Reno, Nev., and Thomas A. Henrie, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 15, 1972, Ser. No. 232,606
Int. Cl. C01b *13/14*
U.S. Cl. 204—96 **3 Claims**

Sb_2S_3 is converted to Sb_2O_5 by electrolysis of a slurry of sulphide in an aqueous solution containing alkali metal chloride, alkali metal bromide, or a mixture of the two.

3,755,107
ELECTROLYTIC ANODE

Carl D. Keith, Summit; Alfred J. Haley, Jr., Florham Park, and Robert M. Kero, Cranford, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

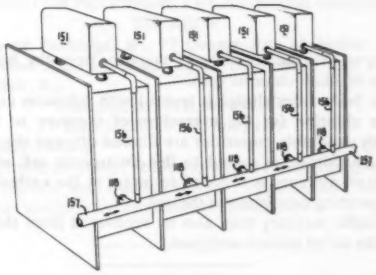
Continuation-in-part of Ser. No. 786,407, Dec. 23, 1968, Pat. No. 3,616,329. This application Nov. 21, 1969, Ser. No. 878,953. The portion of the term of this patent subsequent to Oct. 26, 1988, has been disclaimed.
Int. Cl. C01d *1/06*
U.S. Cl. 204—98 **5 Claims**

An improved anode for the electrolysis of brine is comprised of a corrosion resistant valve metal substrate and a thin adherent exterior coating consisting esentially of ruthenium oxide and a carbide, the carbide being inert to the electrolysis environment. An especially effective anode has a coating of ruthenium oxide and boron carbide.

3,755,108
METHOD OF PRODUCING UNIFORM ANOLYTE HEADS IN THE INDIVIDUAL CELLS OF A BIPOLAR ELECTROLYZER

Carl W. Raetzsch, and Hugh Cunningham, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 55,693, July 17, 1970. This application Aug. 12, 1971, Ser. No. 171,231
Int. Cl. C01d *1/06*
U.S. Cl. 204—98 **2 Claims**



A bipolar electrolyzer adapted for the electrolysis of aqueous solutions of alkali metal halides is disclosed, as well as methods of operating the electrolyzer. The electrolyzer includes means to maintain a uniform head of anolyte in all of the individual cells, such as by extending pipe means, external of the cells to minimize current leakage and independent of the feed means, to connect the cells below the level of anolyte in each cell.

3,755,109
ELECTROLYSIS OF ALKALI METAL CHLORIDES

Karl Opp, Heidelberg; Ewald Wygasch, Ludwigshafen, and Gotthard Csizi, Bad Duerkheim, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Apr. 21, 1971, Ser. No. 136,213
Claims priority, application Germany, Apr. 27, 1970, P 20 20 480.2
Int. Cl. C01d *1/08*
U.S. Cl. 204—99 **4 Claims**

Disturbances occurring in chloride-caustic cells using the amalgam method are caused by felty coatings which form on the bottom of the cells. These disturbances can be avoided by treating the mercury (after it has left the decomposer and be-

fore or after it has entered the electrolytic cell) with an aqueous solution which contains chlorine and/or ferric chloride.

3,755,110

PROCESS FOR THE RECOVERY OF MERCURY FROM THE BRINE FILTER SLUDGE OBTAINED IN THE ELECTROLYSIS OF ALKALI METAL CHLORIDES BY THE AMALGAM PROCESS

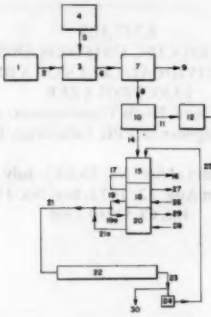
Ewald Wygasch, Ludwigshafen, and Guenther Weiss, Wachenheim, both of Germany, assignors to Badische Anillin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Mar. 15, 1971, Ser. No. 124,170

Claims priority, application Germany, Mar. 18, 1970, P 20 12 754.2

Int. Cl. C01d 1/16; B01k 3/00

U.S. Cl. 204—99 **6 Claims**



Process for the recovery of mercury from the brine filter sludge of alkali-chlorine cells.

The brine filter sludge is treated with solutions containing active chlorine for the extraction of mercury or its compounds. Insoluble impurities are filtered off, and the resulting mercuric filtrate is passed to the electrolytic cell where the dissolved mercury is reduced to metal at the cathode under the operating conditions of the cell.

Metallic mercury may also be recovered from the filtrate with the aid of sodium amalgam.

3,755,111

ELIMINATION OF FLOATING SLIME DURING ELECTROLYTIC REFINING OF COPPER

Nils Folke Rune Lindstrom, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed May 25, 1971, Ser. No. 146,850

Claims priority, application Sweden, May 28, 1970, 7380/70

Int. Cl. C22d 1/16; B01k 3/06

U.S. Cl. 204—108 **6 Claims**

A method for eliminating floating slime in the electrolytic refinement of copper. The method uses a novel electrolyte which contains specific quantities of trivalent arsenic, pentavalent arsenic and pentavalent antimony; the arsenic contents being obtained and maintained by direct addition of the substances to the solution, or by increasing the arsenic content in the anode.

3,755,112

ELECTROWINNING OF COPPER

Gerald F. Fountain, Casa Grande; John P. Pringle, Allen, and James T. Lewis, Plano, all of Tex., assignors to Capital Wire and Cable Company, Plano, Tex.

Filed Feb. 1, 1972, Ser. No. 222,644

Int. Cl. C22d 1/16; B01k 3/06

U.S. Cl. 204—108 **7 Claims**

A novel electrode is provided which is particularly useful as an anode in an electrowinning system for the electrodeposition of copper from acid solution. This novel electrode is an alloy of lead and bismuth containing from 95 to 70 parts by weight lead with corresponding proportions of 5 to 30 parts by weight bismuth. The use of this electrode as an anode in conjunction with conventional cathodes in an electrowinning process for copper results in cathode deposited copper having a purity of at least 99.99 percent, and a lead content of no greater than 20 parts per million.

3,755,113

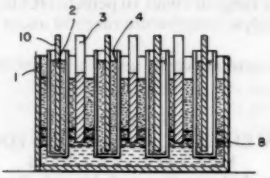
METHOD FOR ELECTROREFINING OF NICKEL

Ivan Dimitrov Entshev; Nikola Tzanov Kuntshev; Gueorgui Alexandrov Haralamplev, all of Plovdiv, and Dimitar Andreev Petrov, Slatitza, all of Bulgaria, assignors to NIIZM, Plovdiv, Bulgaria

Continuation-in-part of Ser. No. 798,772, Feb. 12, 1969, abandoned. This application Oct. 20, 1971, Ser. No. 191,040

Int. Cl. C22d 1/14

U.S. Cl. 204—113 **8 Claims**



Method for electrorefining of nickel at high current densities wherein the process is carried out by use of reverse current with a duration of the reversal electrode polarity of 3.0 to 8.0 percent of the total current period and a frequency of reversal of the poles of two to six times in a minute. The process is preferably carried out at a temperature of the solution of 50° to 80°C and with an electrolyte consisting substantially of nickel from 70 to 100 gr/l, as $NiSO_4$; sodium chloride from 40 to 80 gr/l; sodium sulphate from 40 to 70 gr/l; and boric acid from 3 to 20 gr/l. The electrolyte is continuously agitated during the process; the process may advantageously be practiced at high current densities by apparatus capable of thoroughly and continuously circulating the electrolyte.

3,755,114

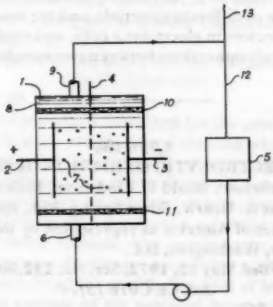
DECREASING THE METALLIC CONTENT OF LIQUIDS BY AN ELECTROCHEMICAL TECHNIQUE

Michael Tarjanyi, North Tonawanda, and Murray P. Strier, Amherst, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,923

Int. Cl. C02b 1/82; C02c 5/12

U.S. Cl. 204—114 **13 Claims**



A method for decreasing the metallic content of a solution which comprises passing an electric current through a solution

containing metallic material, which solution is contained as the electrolyte in a cell, said cell having at least one positive and one negative electrode, between which the current is passed, and wherein the electrolyte also contains a bed of particles, distributed therein, such that the porosity of the bed is from about 40 to 80%, porosity being defined as

$$\left(1=\frac{\text{volume of particles}}{\text{volume of cell wherein the particles are distributed}}\right)\times 100$$

The electrolysis of the electrolyte is continued until the desired reduction in the metallic content thereof is obtained.

3,755,115

METHOD OF MANUFACTURING ALUMINIUM ELECTRODE FOIL FOR ELECTROLYTE CAPACITORS

Arend Van Herwijnen, and Pieter Marten Vogel, both of Centuurbaan, Zwolle, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 102,098

Claims priority, application Netherlands, Jan. 2, 1970, 7000002

Int. Cl. C23b *1/00, 3/02*

U.S. Cl. 204—129.75 **5 Claims**

Enlargement of the effective surface of aluminum foil for electrolytic capacitors by electrolytical etching in the aqueous solution of 1–5 mol/l of an alkali halogenide and 1–5 mol/l boric acid at a pH of between 0 and 2.5. 2.5

3,755,116

PROCESS FOR THE PRODUCTION OF ALUMINUM BASE OFFSET PRINTING PLATES

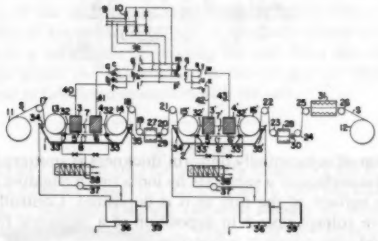
Shiro Terai, Nagoya; Toshio Suzuki, Kasugai, and Yoshikatsu Hayashi, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries Limited, Tokyo, Japan

Filed Apr. 5, 1972, Ser. No. 241,202

Claims priority, application Japan, Apr. 17, 1971, 46/24817

Int. Cl. C23b *3/02, 1/00*

U.S. Cl. 204—129.95 **19 Claims**



This invention relates to a process of producing an aluminum base offset printing plate including a step wherein the surface of an aluminum base sheet is roughened or grained electrolytically by treating with alternating electric current at a current density of a selected range in an aqueous electrolyte containing hydrogen chloride as the primary etching agent and in the presence of one or more anti-corrosive agents chosen from some selected primary alkyl amine, secondary alkyl amines and tertiary alkyl amines, either un-substituted or substituted by carboxyl or hydroxyl on the alkyl group(s), alkylene diamines, alkyl aldehydes, alkanoic acid amides, urea, chromic acid and known ionic surface-active agents. The presence of the anti-corrosive agent results in an improved uniformity of the grain particle size and prevents the dark colored aluminum smutt from depositing on the grained surface. The electrolytically graining treatment may continuously be performed with a continuous aluminum strip when an electrolytic cell of a particular arrangement as shown in the accompanying drawings is employed and when the treatment is effected in the presence of a mono-alkanol amine, di-alkanol amine, tri-alkanol amine or non-ionic surface active agent derived from polyethylene-glycol as the anti-corrosive agent under particularly more favorable etching conditions.

3,755,117

COATING STAINLESS STEELS

Anthony Christopher Hart, Dudley, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 10, 1971, Ser. No. 114,357

Claims priority, application Great Britain, May 26, 1970, 25,215/70; Jan. 11, 1971, 1,245/71

Int. Cl. C23b *5/50;* **C23f** *17/00;* **C23b** *9/00*

U.S. Cl. 204—140 **10 Claims**

Films or coatings on stainless steel produced by immersion in solutions of chromic acid are electrolytically treated to increase the coating's resistance to abrasion. In the electrolytic treatment, the coated stainless steel is made the cathode in a bath of an aqueous solution of chromic acid.

3,755,118

PROCESS FOR PREPARING LOGANIN AND ANALOGS THEREOF

John Joseph Partridge, Jr., 77 Orange Rd., Montclair, N.J., and Milan Radoje Uskokovic, 7 Windermere Rd., Upper Montclair, N.J.

Filed Jan. 5, 1970, Ser. No. 845

Int. Cl. C07c *47/8;* **B01j** *1/10*

U.S. Cl. 204—158 R **6 Claims**

The present invention relates to a process for the preparation of loganin and analogs thereof. Loganin and analogs thereof are useful in the preparation of alkaloids.

3,755,119

ARTICLE ELECTROCOATED WITH ADHESIVELY BONDABLE ACRYLIC RESIN CONTAINING BIS-UREA

Gerhard Josef Pietsch, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 29, 1971, Ser. No. 138,834

Int. Cl. B01k *5/02;* **C23b** *13/00*

U.S. Cl. 204—181 **3 Claims**

There are provided both (1) a method for increasing the adhesiveness of electrodeposited acrylic resin coatings to epoxy or polyurethane adhesives which comprises incorporating into said acrylic resin either a bis-urea or an epoxy compound prior to electrodeposition and (2) the resultant coated articles.

3,755,120

INTERNAL COMBUSTION ENGINE EXHAUST CATALYTIC REACTOR, WITH ELECTRICAL CHARGE MEANS

Robert W. Kinser, Ogden, Utah, assignor to New Products Corporation, Ogden, Utah

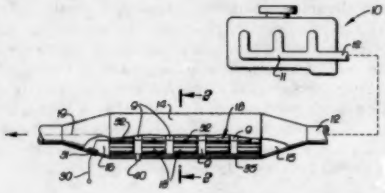
Filed Feb. 3, 1972, Ser. No. 222,755

Int. Cl. F01n *7/00, 3/08*

U.S. Cl. 204—164 **11 Claims**

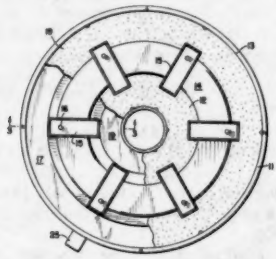
Internal combustion engine hot exhaust gas flow is treated to reduce the oxide content and increase the O_2 content of the gases by

a. effecting intimate contact of the hot gaseous flow with confined copper containing strip material, and



b. electrically energizing the material at high voltage during said contact.

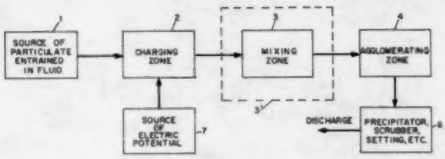
3,755,121
ELECTROPHORESIS KIT AND SYSTEM
Charles A. Schlutz, 7081 N.W. 10th Pl., Plantation, Fla.
Filed Oct. 25, 1972, Ser. No. 300,810
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **7 Claims**



An electrophoresis kit and system is provided wherein a base unit containing the electrodes and spaced apart buffer chambers and the test samples are contained in the bridges in a corresponding lid in contact with the buffer chambers. The test samples are poured into molding bridge chambers in the base unit, the lid placed thereon, transferring the test sample to the lid, and the lid replaced to make electrical contact with the spaced bridge chambers in the base. Registration means are provided for correctly positioning the lid with respect to the base for operation of the electrophoresis apparatus. The kit may assume a variety of shapes, such as rectangular or circular, and the entire assembly is preferably made of molded consumable plastic material so as to be disposable. The invention includes the method of assembly and operation of the electrophoresis unit.

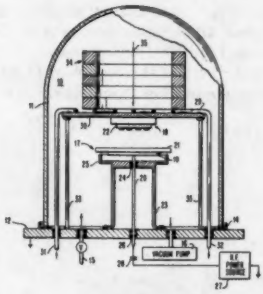
3,755,122
METHOD FOR INDUCING AGGLOMERATION OF PARTICULATE IN A FLUID FLOW
James R. Melcher, Lexington, and Kenneth S. Sachar, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jan. 25, 1971, Ser. No. 109,615
Int. Cl. B03c *5/00*; **C02b** *1/78*
U.S. Cl. 204—186 **5 Claims**

A method of facilitating removal of particulate from a fluid stream whereby individual particles of the particulate are agglomerated to form larger and therefore more easily removable particles. The particulate is passed through a zone which contains electric charging regions disposed at locations transversely spaced across the fluid stream and adapted to charge the particulate. Charge regions are alternately charged across the stream; that is, contiguous charge regions contain oppositely polarized electric fields, thereby to create transverse to the stream small regions where the particulate is charged positive, say, immediately adjacent to regions where it is



charged negative. The thusly charged particles are then mixed to bring the oppositely charged particles into close proximity, one with the other, and small particles of the particulate agglomerate upon larger particles. The agglomerated particulate is then precipitated or otherwise removed from the fluid.

3,755,123
METHOD FOR SPUTTERING A FILM ON AN IRREGULAR SURFACE
Pieter D. Davidse, Maarn, Netherlands; Joseph S. Logan, and Fred S. Maddocks, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 742,297, July 3, 1968, abandoned. This application Mar. 30, 1971, Ser. No. 129,419
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **7 Claims**

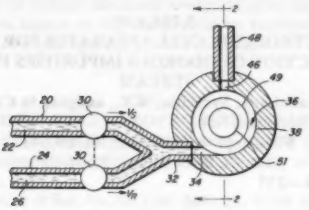


A film of substantially uniform thickness is sputtered on an irregular surface of a substrate by inducting a negative voltage on the surface of the film as it is deposited. Controlling the negative voltage results in deposition of a dielectric film that has good edge coverage properties.

3,755,124
TAG ION CELL
Martin S. Frant, Newton, and James Fowler, Watertown, both of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.
Filed Feb. 11, 1972, Ser. No. 225,415
Int. Cl. G01n *27/18*
U.S. Cl. 204—195 R **11 Claims**

A system for making electrochemical measurements in a flow stream, which system employs reagent addition to a sample stream and a pair of ion-sensing electrodes responsive respectively to the ion of interest and the tag ion in the mixed

stream. The electrodes are so disposed in an electrode chamber that the system is unaffected by the presence of any



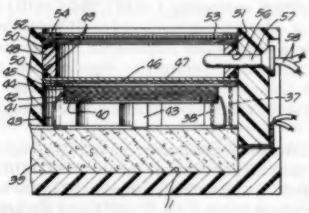
air bubbles in the mixed stream, or variations in flow rate of the mixed stream.

3,755,125

ELECTROCHEMICAL GAS ANALYZER

Manuel Shaw, Los Angeles, and Wayne E. Perkins, Arleta, both of Calif., assignors to Envirometrics Inc., Marina del Rey, Calif.

Filed Jan. 14, 1971, Ser. No. 106,431
Int. Cl. G01n *27/28*
U.S. Cl. 204—195 P **21 Claims**



An apparatus for analyzing the proportion of a selected gas in a mixture of gases wherein gas detector elements are adapted to be removably plugged into an electrical analyzer for converting the electrical currents produced by such detectors into readings of proportions of the selected gases including compensating for the detection of multiple gases by one detector through the use of another detector responsive to less than all of such multiple gases to produce a reading of the proportion of the other gases. The detector comprises a unitary assembly of an electrolytic cell of uniquely simple construction with a membrane separating the cell from the chamber through which the gas mixture is passed and an electrolyte reservoir in full communication with the cell.

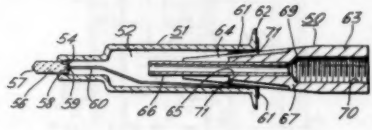
3,755,126

SYSTEM FOR DETERMINING AMOUNT OF AN ELEMENT DISSOLVED IN A MOLTEN METAL

Donald C. Misener, Ottawa, Ontario; Donald K. Faurschou, Kanata, Ontario; James C. Pope, Ottawa, Ontario, all of Canada, and Richard Hadden, Paisley, Scotland, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed July 15, 1970, Ser. No. 54,937
Claims priority, application Canada, Dec. 24, 1969, 70,847
Int. Cl. G01n *27/00, 27/26, 27/46*
U.S. Cl. 204—195 S **42 Claims**

A probe is provided for determining the amount of dissolved gas, (e.g. oxygen) in a molten metal (e.g. steel). It includes a disposable tip including three essential elements. The first element is a solid electrolyte which retains its ionic conduction properties and which does not exhibit substantial electronic conduction properties at the temperature of the molten metal. The electrolyte is a compact which has been individually formed by a technique which includes first pressure compacting and then sintering a free flowing mixture of the solid electrolyte and a suitable fugitive binder and preferably also a small amount of a suitable high temperature binder. The second element is a heat-resistant, substantially electrically non-conductive tube. The compact, which has a relative density, of about 70 percent, and which has an axial depression therein, is disposed and secured at one open end of the heat-resistant tube. The third element is at least one electrically conductive metallic element in intimate electrical contact with the electrolyte. Preferably, the disposable tip includes, and is disposed in, a fourth element, namely a plug which is formed of heat-resistant, substantially electrically non-con-



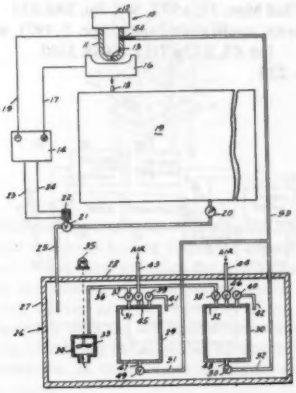
ductive material, the plug being provided with a longitudinally extending aperture therethrough. Preferably also, the tip includes a fifth element, namely a tube formed of a structurally rigid, electrically conductive metal which secures the plug in one of its open ends. The tube has a major portion of its length non-degradable in the molten metal being tested. The tip is associated with a structurally rigid, heat-resistant, electrically conductive lance, to provide a mechanical assembly of the probe tip and the lance so that a component of the lance then is also in electrical contact with the electrically conductive metallic element which is in intimate electrical contact with the solid electrolyte, and also to provide the connection to a source of the reference gas.

3,755,127

APPARATUS FOR ELECTROCHEMICAL MACHINING

Roger K. Tyler, Redford, and Jack New, Garden City, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 13, 1972, Ser. No. 243,772
Int. Cl. B23p *1/00, 1/04*
U.S. Cl. 204—224 M **5 Claims**

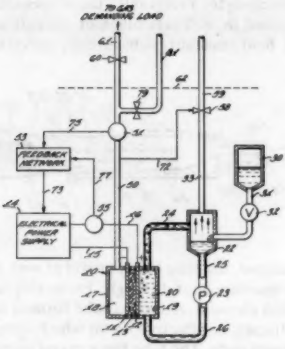


Apparatus for electrochemical machining of metals utilizing a highly conductive electrolyte wherein a self-contained electrolyte circulating system is provided for each machine or pair of machines, and electrical isolation is maintained between this self-contained electrolyte circulating system and the main supply system during the machining operation to prevent electrical interaction between a substantial number of machines which are supplied from the same source of electrolyte.

3,755,128
ELECTROLYSIS SYSTEM AND METHOD

Warren E. Herwig, Greenfield, Wis., assignor to Isotopes, Inc., Westwood, N.J.

Filed Sept. 15, 1970, Ser. No. 72,250
Int. Cl. B01k *3/00*; C01b *13/04*
U.S. Cl. 204—230 5 Claims

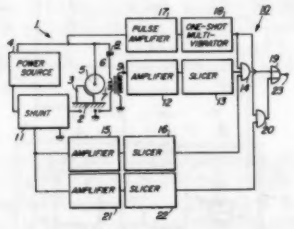


An electrolysis apparatus and method including means for decomposing an electrolyte into one or more gas products, and also including means responsive to the pressure or flow condition of one of the product gases for controlling the electrical input to the electrolysis cell whereby to match the gas generation rate and the gas demand rate in the electrolysis system. Electrical power cost of the electrolysis process, a major operating expense, will be reduced if the gas generation rate responds to the demand rate.

3,755,129
MACHINE TABLE FEED CONTROL SYSTEM FOR ELECTROLYTIC GRINDING MACHINES

Yasuo Suzuki, and Tomoyoshi Mikoshiba, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 240,031
Claims priority, application Japan, Apr. 2, 1971, 46/19695
Int. Cl. B23p *1/12*; B01k *3/00*
U.S. Cl. 204—225 2 Claims



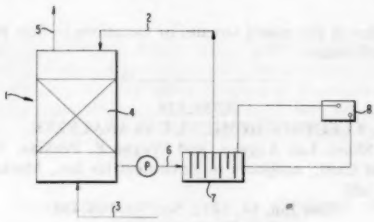
In electrolytic grinding machines where a working voltage is applied between grinding wheel and workpiece, the feed speed of the machine table is very important, and an inappropriate speed inconsistent with prevailing working conditions would result in the reduction of working efficiency and working precision and a degradated surface roughness, as well as being prone to short-circuit between the grinding wheel and workpiece.

In this specification, a machine table feed control system for automatically controlling the feed speed of the machine table to an optimum speed consistent to prevailing working conditions is disclosed.

3,755,130
ELECTROLYTIC CELL APPARATUS FOR THE DESTRUCTION OF ODOROUS IMPURITIES IN A GAS STREAM

Ernest R. Zabolotny, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,641
Int. Cl. B01k *3/00*; C22d *1/02*
U.S. Cl. 204—237 4 Claims



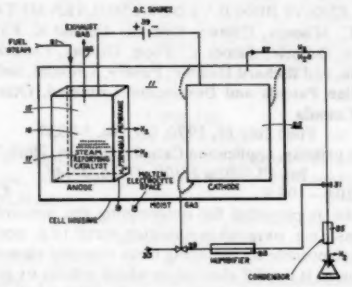
In combination with a contact zone for the mass transfer of pollutant or odorous materials from a gas stream to an aqueous acid stream containing Co(III), the Co(III) oxidizing the pollutant or odorous materials and itself becoming reduced to Co(II), there is provided electrolytic regeneration apparatus for the continuous electrolytic regeneration of Co(II) to Co(III). Pollutant or odorous materials are also continuously destroyed at the electrodes of the electrolytic regeneration apparatus.

The electrolytic regeneration apparatus comprises a Co(III) and acid-resistant container to receive the Co(III)-acid stream wth lead anodes and cathodes supported in the interior of the container which contact the Co(III)-acid stream during electrolytic regeneration of Co(III) and pollutant destruction. The area of the anodes is such that upon the passage of electrical current through the electrolytic apparatus the regeneration of Co(III) from Co(II) in the aqueous acid stream is the predominant reaction therein.

3,755,131
APPARATUS FOR ELECTROLYTIC PURIFICATION OF HYDROGEN

Harold Shalit, Drexel Hill, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 807,865, March 17, 1969, Pat. No. 3,577,329. This application Jan. 20, 1971, Ser. No. 108,192
Int. Cl. C22d *3/02*; B01k *3/06*
U.S. Cl. 204—246 5 Claims



An improved process and apparatus for the production of hydrogen of high purity whereby a carbonaceous fuel is

reformed to produce hydrogen and said hydrogen is recovered economically from said reforming operation through the use of an electrolytic process using chemical energy of the reforming process to reduce electrical energy needed and wherein a moist gas is added to the electrolyte to facilitate the electrolytic recovery of hydrogen at the cathode.

3,755,132

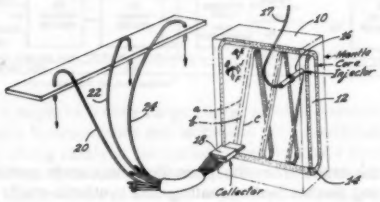
FLUID BELT ELECTROPHORESIS APPARATUS

Alexander Kolin, and Stephen Jay Luner, both of Los Angeles, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 50,650, June 29, 1970, abandoned. This application Nov. 8, 1971, Ser. No. 196,283

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **13 Claims**



A stabilized electrophoretic apparatus is provided for free continuous flow electrophoresis for separating fractions of a chemical or biological substance, and for the injection and measuring the mobilities thereof. The apparatus provides for theinjection of the material to be processed into a fluid belt of an electrolyte buffer solution to form a streak, with the fluid belt on sheath and the streak being moved in a particular direction by the combined reaction of electric current flowing through the buffer solution and a magnetic field. An electric field is provided substantially perpendicular to the direction of movement of the fluid belt, and this field causes electrophoretic migration of the charged particle components of the streak, thereby defining them from their normal course. The apparatus is constructed to incorporate a window so that an optical path may be established through the fluid belt, so that the electrophoretic mobilities of the charged particles may be readily observed and measured. This optical path also provides for a servo control of the apparatus, as will be described.

3,755,133

DEVICE FOR EXPOSING SMALL ROLLABLE BODIES TO SPUTTERING

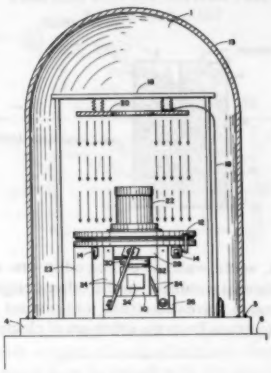
John Edwin Greenlay, Montreal; Bruce Denis William Pulling, Otterburn Heights, and Arthur Francis Morton, St. Hubert, all of Quebec, Canada, assignors to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed June 3, 1971, Ser. No. 149,442

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **15 Claims**

Cylindrical ceramic blanks are fed endwise down grooves in a vibratory table and simultaneously caused to revolve about their axes, while subjected to the deposition of material sputtered from above. The endwise movement can be stopped by closing gates at the end of the grooves, in order to prolong exposure to sputtering. The blanks are loaded in a central hopper of a round table vibrated by a torsional vibrator of the type used for tangential feeders. The grooves are offset from the radial direction so that the vibration of the table will impart slight outward impulses to the blanks, which are additionally led forward by a slight downward slant of the grooves. The grooves are semicylindrical and a few per cent larger in



diameter than the blanks in order to produce a smooth rolling motion.

3,755,134

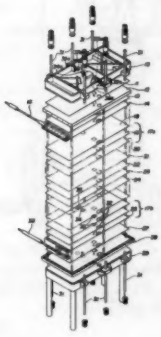
ELECTRODIALYSIS APPARATUS

Leo H. Francis, Burlingame, Calif., and Gerald J. Treleven, Stevens Point, Wis., assignors to Patent Technology, Inc., San Francisco, Calif.

Division of Ser. No. 811,187, March 27, 1969, Continuation-in-part of Ser. No. 404,658, Oct. 19, 1964. This application May 21, 1970, Ser. No. 39,368

Int. Cl. B01d *13/02*

U.S. Cl. 204—301 **2 Claims**



Electrodialysis apparatus for reducing the mineral salt content of liquid materials having dispersed organic constituents (e.g., whey). Means are provided for controlling certain factors during the course of an operating cycle, including the applied stack voltage and the resistivity of the concentrating solution, together with the selection of membranes to provide low working membrane resistance, whereby demineralization of such materials is made more efficient, with savings in processing costs.

3,755,135

ELECTRIC DEMINERALIZING APPARATUS

Allan M. Johnson, 7423 Balcolm Ave., Reseda, Calif.

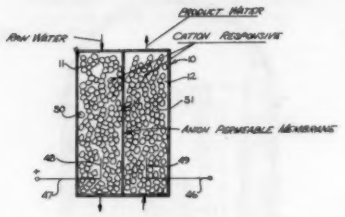
Filed Jan. 20, 1971, Ser. No. 107,997

Int. Cl. B01d *13/02*

U.S. Cl. 204—301 **18 Claims**

An electric demineralizing apparatus and method in which porous electrodes of the same composition are located in

compartments on opposite sides of an ion permeable membrane and the electrolyte flows through the electrodes and along the membrane. When a D.C. potential is applied across



the electrodes, waste water is produced in one compartment and product water is produced in the other compartment. The D.C. power source drives electrons into one set of electrodes and extracts electrons from the other set of electrodes.

3,755,136

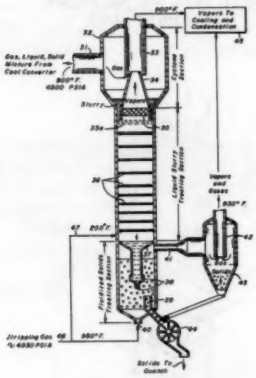
SYSTEM FOR REMOVING SOLIDS FROM COAL LIQUEFACTION REACTOR EFFLUENTS

Marvin C. Fields, Wilkins Township, Allegheny County, and James L. Meyer, Monroeville Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1971, Ser. No. 123,510

Int. Cl. C10g *1/00*

U.S. Cl. 208—8 **24 Claims**



This is a process for separating liquid and solids from coal liquefaction reactions by vaporization with hot, hydrogen-rich gas.

3,755,137

MULTI-STAGE EBULLATED BED COAL-OIL HYDROGENATION AND HYDROCRACKING PROCESS

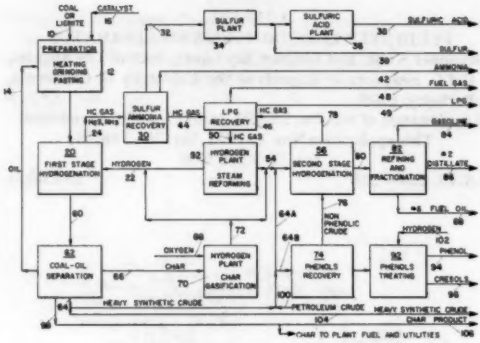
Seymour C. Schuman, Princeton, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Continuation of Ser. No. 18,383, Feb. 13, 1970, abandoned, and a continuation of Ser. No. 784,967, Sept. 5, 1968, abandoned, and a continuation of Ser. No. 638,663, May 15, 1967, abandoned, and a continuation of Ser. No. 410,485, Nov. 12, 1964, abandoned. This application Mar. 24, 1971, Ser. No. 127,800

Int. Cl. C10g *1/08*

U.S. Cl. 208—10 **2 Claims**

A process for converting solid carbonaceous materials into valuable chemicals by hydrogenating a slurry of the solid material with a pasting oil in a reaction zone containing an ebullated catalytic bed at temperatures in the range from about 750–950°F. and a total pressure in the range from about 1,000 to 4,000 psig, separating the reaction effluent into gaseous materials, char, pasting oil, and a heavy synthetic crude,



freeing the crude from the phenolic compounds contained therein and further hydrogenating said synthetic crude in a second stage catalytic reaction zone to produce a light synthetic crude and wherein a portion of the products of the process are used to supply some of the hydrogen requirement of the system.

3,755,138

LUBE OILS BY SOLVENT DEWAXING AND HYDRODEWAXING WITH A ZSM-5 CATALYST

Nai Yuen Chen, Hopewell Township, Mercer County, and William E. Garwood, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 56,652, July 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 865,470, Oct. 10, 1969, Pat. No. 3,700,585. This application Dec. 10, 1971, Ser. No. 206,888

Int. Cl. C10g *13/04*

U.S. Cl. 208—33 **5 Claims**

A two-step or combination process for preparing low pour point lube oils is set forth. The process involves subjecting a lube stock to a mild solvent dewaxing step, so as to obtain high quality waxes and a lube stock having an intermediate pour point; recovering the waxes and subjecting said intermediate pour point lube stock to a hydrowaxing step over a crystalline aluminosilicate of the ZSM–5 type to obtain a product having a pour point of 0° F and lower.

3,755,139

ASPHALT MANUFACTURE

Gordan A. McClaren, Houston, Tex., and John W. Gibson, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 880,629, Nov. 28, 1969, Pat. No. 3,607,722. This application May 19, 1971, Ser. No. 144,950

Int. Cl. C106 *3/02*

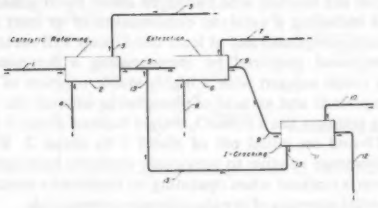
U.S. Cl. 208—44 **7 Claims**

An asphalt flux having improved rheological properties is prepared from a straight run asphalt residue by means of catalytic hydrogenation under moderate conditions.

3,755,140
SIMULTANEOUS PRODUCTION OF AROMATIC HYDROCARBONS AND ISOBUTANE

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 11, 1971, Ser. No. 170,801
Int. Cl. C10g *37/10*
U.S. Cl. 208—62 **6 Claims**

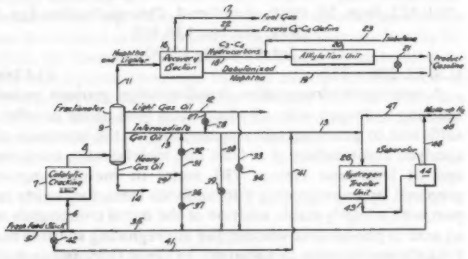


A naphtha boiling range charge stock is converted into aromatic hydrocarbons and isobutane via a combination process involving catalytic reforming, separation and hydrocracking. The catalytic reforming is effected at low-severity conditions to maximize the reaction of naphthene dehydrogenation while simultaneously decelerating the dehydrocyclization and cracking of paraffinic hydrocarbons. Following separation of an aromatic concentrate, the remaining saturated hydrocarbons are subjected to a particular hydrocracking technique which results in exceedingly high yields of isobutane.

3,755,141
CATALYTIC CRACKING

Douglas J. Youngblood, Groves; James H. Colvert, Chatterton, and Gerald V. Nelson, Nederland, all of Tex., assignors to Texaco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 687,283, Dec. 1, 1967, abandoned. This application Feb. 11, 1971, Ser. No. 114,721
Int. Cl. C10g *37/06*
U.S. Cl. 208—56 **8 Claims**

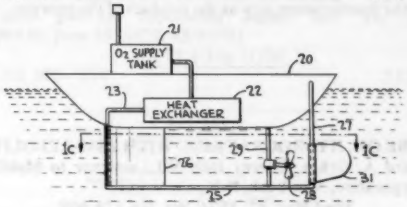


A process for the production of high octane motor gasoline stocks by catalytic cracking in which a distillate charge stock boiling above about 400° F is subjected to catalytic cracking in a catalytic cracking unit at limited per pass conversion not exceeding 80 volume percent of the charge stock, 430° F + gas oil product of the catalytic cracking operation is subjected to hydrogen treatment to lower its polycyclic aromatic content, as indicated by ultraviolet absorption to a concentration approximating that of the fresh charge stock to the catalytic cracking unit, and liquid effluent of the hydrogen treatment step is passed to the catalytic cracking unit as part of the feed thereto, producing exceptionally high yields of high octane naphtha suitable as motor gasoline blending stock.

3,755,142
PROCESS AND APPARATUS FOR THE PURIFICATION OF A NATURAL BODY OF WATER

William Whipple, Jr., 395 Mercer Rd., Princeton, N.J.

Filed May 21, 1971, Ser. No. 145,766
Int. Cl. C02c *5/04*
U.S. Cl. 210—63 **32 Claims**



Process and apparatus for purification of pollutants in a natural body of water includes the introduction of pure oxygen into the water and thereafter agitating the water supersaturated with oxygen so as to effectively disperse the treated water and cause it to be mixed with the untreated water. The oxygen may be introduced directly into the body of water to be treated or into a tank whereafter the treated water is discharged into the water and subsequently agitated.

3,755,143
METHOD FOR REARRANGING THE STRUCTURES OF CRUDE OIL OR CRUDE OIL FRACTIONS

Takuji Hosoi, Tokyo; Koichi Washimi, Fukushima; Masaaki Takahashi, Tokyo; Ryoichi Takahashi, and Shinpei Gomi, both of Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

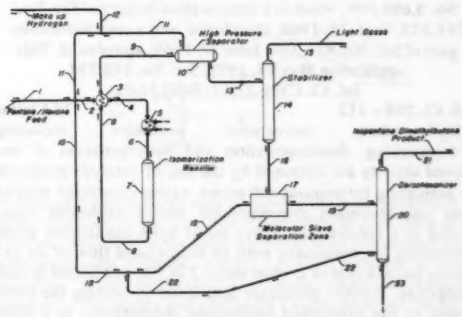
Filed Apr. 23, 1970, Ser. No. 31,419
Claims priority, application Japan, Apr. 25, 1969, 44/31494
Int. Cl. C10g *37/06*
U.S. Cl. 208—67 **10 Claims**

A process for producing useful intermediate products from crude oil or crude oil fractions comprising pyrolysis by contacting the crude oil with high temperature steam to produce a mixture of volatile hydrocarbons and polycyclic aromatic tars and subsequently reacting the tars with hydrogen or an olefin is disclosed.

3,755,144
HYDROCARBON ISOMERIZATION AND SEPARATION PROCESS

George F. Asselin, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 13, 1971, Ser. No. 188,792
Int. Cl. C10g *39/00*
U.S. Cl. 208—95 **5 Claims**



A process for isomerizing and separating a low octane C_5–C_6 hydrocarbon charge stock to provide a branched

hydrocarbons product in which the charge stock is contacted with an isomerization catalyst in an isomerization zone, the effluent from the isomerization zone is separated, in a sorption zone employing a molecular sieve sorbent, into a branched hydrocarbons stream and a normal hydrocarbons stream; the branched hydrocarbons stream is fractionated, and a methylpentanes-free stream of branched hydrocarbons is recovered from the fractionation step as the product of the process.

3,755,145

LUBE OIL HYDROCRACKING WITH ZSM-5 ZEOLITE

Bernard A. Orkin, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,409
Int. Cl. C10g *13/02, 37/02*
U.S. Cl. 208—111 **9 Claims**

A process for preparing lube oils characterized by possessing low pour points is set forth. The process involves subjecting a lube stock to a hydrocracking operation utilizing a catalyst mixture comprising hydrogenation components, a conventional cracking catalyst which can be either crystalline or amorphous and a crystalline aluminosilicate of the ZSM–5 type.

3,755,146

ISOMERIZATION AND HYDROCRACKING OF PARAFFINS

Jesse R. Harris, and Clifford E. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 17, 1971, Ser. No. 181,594
Int. Cl. C10g *13/02*
U.S. Cl. 208—112 **8 Claims**

A process for isomerization and hydrocracking of paraffins is provided using as catalyst a hydrogen metal bronze. In one embodiment of the invention a supported catalyst comprising a hydrogen metal bronze is used to promote the isomerization and hydrocracking of paraffins.

3,755,147

HYDROCARBON CONVERSION PROCESSES AND CATALYSTS FOR USE THEREIN

Grant A. Michelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 856,143, Sept. 8, 1969, Pat. No. 3,609,099, which is a continuation-in-part of Ser. No. 761,322, Sept. 20, 1968, abandoned, and a continuation-in-part of Ser. No. 837,340, June 27, 1969, abandoned. This application May 28, 1971, Ser. No. 148,194
Int. Cl. C10g *23/02;* **B01j** *11/82*
U.S. Cl. 208—112 **16 Claims**

Hydrocarbon conversion processes including hydrocracking, denitrogenation and hydrogenation of improved activity are obtained by the use of catalysts prepared by activating foraminous refractory oxides combined with at least one thermally decomposable and/or oxidizable compound of a catalytically active metal upon calcination while contacting the composite with an accelerated flow of an oxidizing gas at a rate of at least about 2 SCFM per pound of said composite. Further advantage is realized by heating the composite to the prescribed calcination temperature at a controlled gradual rate. It is also generally desirable to assure that the inlet temperature of the oxidizing gas prior to contact with the composite is less than about 500°F.

3,755,148

HYDROCARBON HYDROGENATION

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 837,340, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 761,322, Sept. 20, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,493
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 **11 Claims**

Hydrocarbons having at least one point of carbon-to-carbon unsaturation are reacted with hydrogen under hydrogenation conditions including a catalytic combination of at least one molybdenum compound and at least one Group VIII metal or metal compound prepared by impregnating a foraminous refractory oxide support with a highly stable solution of the metal compounds and an acid of phosphorus wherein the impregnating solution has a P/MoO_3 weight ratio of about 0.1 to about 0.25 and an initial pH of about 1 to about 2. Even greater advantage relative to previously available hydrogenation systems is realized when operating on feedstocks containing substantial amounts of organo-nitrogen compounds.

3,755,149

PROCESS FOR DESULFURIZING PETROLEUM RESIDS

Edward M. Kohn, Philadelphia, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 9, 1971, Ser. No. 151,568
Int. Cl. C10g *17/08*
U.S. Cl. 208—209 **4 Claims**

A process for desulfurizing vacuum bottoms derived from a residual oil which comprises contacting said bottoms with metallic sodium in the presence of hydrogen, contacting the sludge-containing product thus produced with an aliphatic hydrocarbon, and separating the sulfur and sodium-containing sludge from the hydrocarbon solution of the desulfurized resid. Water washing the separated sludge removes sulfur and sodium, enabling the remaining hydrocarbon portion to be reclaimed.

3,755,150

HYDROGENATIVE DESULFURIZATION

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 837,340, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 761,322, Sept. 20, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,508
Int. Cl. C10g *17/00*
U.S. Cl. 208—216 **11 Claims**

A superior hydrogenative desulfurization process includes reacting hydrogen with a hydrocarbon feed under conditions sufficient to promote said reaction and in the presence of a catalytic combination of at least one molybdenum compound and at least one Group VIII metal or metal compound prepared by impregnating a foraminous refractory oxide support with a highly stable solution of the metal compounds and an acid of phosphorus wherein the impregnating solution has a P/MoO_3 weight ratio of about 0.1 to about 0.25 and an initial pH of about 1 to about 2. Even a greater advantage relative to previously available hydrogenative hydrocarbon conversion systems is realized when operating on feed-stocks containing substantial amounts of organonitrogen compounds.

3,755,151

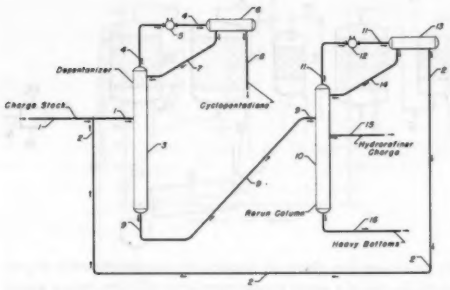
HYDROREFINING FEED STOCK PREPARATION

George F. Asselin, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 21, 1970, Ser. No. 100,104
Int. Cl. C10g *17/00*
U.S. Cl. 208—255 **4 Claims**

Pretreatment of a hydrorefining feed stock is effected in a fractionation or distillation facility having a plurality of

separation zones. The feed stock is depentanized to remove cyclopentadiene and lower-boiling hydrocarbons; the bottoms, containing cyclopentadiene dimer, is rerun to reject high boiling material as a bottoms, and cyclopentadiene, from the conversion of the cyclopentadiene dimer, as overhead.



3,755,152

REMOVING CONTAMINANTS FROM ORGANIC MATERIALS

Graham L. Gulick, Chicago, Ill., assignor to Quvoe Chemical Industries, Inc., Schiller Park, Ill.

Filed Sept. 14, 1970, Ser. No. 72,185
Int. Cl. C10g *25/04*
U.S. Cl. 208—307 **9 Claims**

A treating method is described wherein oils or other organic liquids having contaminants therein which are difficult to separate from the oils are removed by mixing and finely subdividing granules of two different surface active adsorbents, such as an activated carbon adsorbent and a molecular sieve adsorbent, adding the mixed adsorbents to the contaminated oil or the like, and, preferably with high shear mixing and heating, allowing the mixed adsorbents to remove the contaminants, and separating the colloidal sized solid adsorbents from the treated materials in a suitable manner, such as by filtration, for example. Examples of oils able to be treated include non-hydrocarbon oils such as silicone oils as well as hydrocarbon oils such as mineral oils and the like. With this method, it is possible to in some instances remove contaminants without removing additives, if desired.

3,755,153

OLEFIN SEPARATION PROCESS USING COPPER-EXCHANGED TYPE X ZEOLITE

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 865,979, Oct. 13, 1969, Pat. No. 3,649,176. This application Mar. 1, 1972, Ser. No. 230,995
Int. Cl. C10g *25/04*; C07c *7/12*
U.S. Cl. 208—310 **7 Claims**

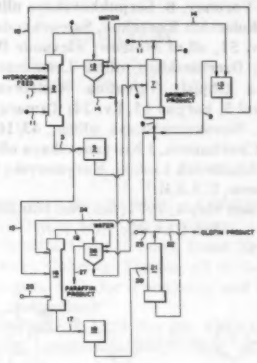
An improved process for the separation of olefins from a hydrocarbon feed mixture containing olefins, saturates and contaminant aromatics. The improvement basically comprises employing as an adsorbent a copper-exchanged Type X zeolite which has decreased polymerization and isomerization activity and increased olefin selectivity in the presence of aromatics.

3,755,154

SEPARATION OF HYDROCARBONS FROM MIXTURE THEREOF

Hiroshi Akabayashi, Tokyo; Satoshi Hoshiyama, Ichikawa, and Shinichiro Takigawa, Funabashi, all of Japan, assignors to Nissan Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1970, Ser. No. 95,826
Claims priority, application Japan, Dec. 10, 1969, 44/98926; June 29, 1970, 45/56701
Int. Cl. C10g *21/00*
U.S. Cl. 208—314 **3 Claims**



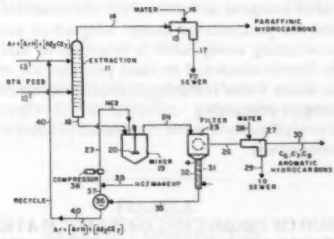
A process for separating at least one component of aromatics, olefins, naphthenes and paraffins from a mixed hydrocarbon stock containing the same by means of extraction with solvent characterized in that a solvent system selected from the group consisting of N-acetyl-morpholine, mixed solvent of N-acetylmorpholine and water, N-acetyl-2-pyrrolidone, mixed solvent of N-acetyl-2-pyrrolidone with water, dimethyl sulfoxide, diethylene glycol and other organic solvent is employed.

3,755,155

SEPARATION OF AROMATICS FROM HYDROCARBON STREAMS

Harry E. Cier, Baytown, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed July 23, 1971, Ser. No. 165,599
Int. Cl. C10g *21/18*
U.S. Cl. 208—331 **14 Claims**



Aromatic compounds may be separated from paraffin-aromatic mixtures by using a solvent consisting of a solution of an aromatic dissolved in the same aromatic in its protonated form with aluminum chloride, [ArH] [Al_2Cl_7], wherein a liquid paraffinic phase and a liquid aromatic phase are formed, separating the phases and adding HCl to the aromatic phase to react with the solvent and adjusting the temperature to form a solid phase having the following formula:

[ArH] [$AlCl_4$]

which then may be separated from the aromatic compounds present in the mixture. The aromatic identified as Ar in the above formula is mesitylene, isodurene, pentamethylbenzene, hexamethylbenzene or polynuclear aromatics more basic than the mononuclear aromatic. [ArH] $[AlCl_4]$ may be used as the solvent in a preferred mode.

3,755,156

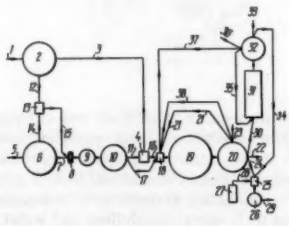
METHOD FOR BIOCHEMICAL TREATMENT OF INDUSTRIAL WASTE WATER

Sergei Vasilievich Yakovlev, Festivalnaya ulitsa, 3, kv. 88; Jury Viktorovich Voronov, B. Serpukhovskaya ulitsa, 56, kv. 58; Vladimir Nikolaevich Korenkov, Samarkandsky bulvar, 32, korpus 1, kv. 51, all of Moscow; Alexandr Borisovich Nevsky, poselok Dzerhinskogo, ulitsa Lermontova, 7, kv. 20, Moskovskaya Oblast; Valentina Andreevna Dobrikova, Gospitalny val 5, korpus 15, kv. 24; Tamara Alexandrovna Karjukhina, Novokuznetskaya ulitsa, 43/16, kv. 61; Ira Nikolaevna Churbanova, I Kuryanovskaya ulitsa, 57, kv. 42, and Jury Mikhailovich Laskov, Kuryanovsky bulvar, 14, kv. 2, all of Moscow, U.S.S.R.

Filed May 4, 1971, Ser. No. 140,205

Int. Cl. C02c *1/06, 1/40*

U.S. Cl. 210—5 **11 Claims**



A method for biochemical treatment of industrial waste water containing combined oxygen in the form of inorganic compounds of hexavalent chromium, chlorine or mixtures of said compounds, in which said industrial waste water is mixed with municipal sewage containing organic matter and in which said municipal sewage is subject to mechanical purification from contaminants present therein. The mixed water is thereafter fed to an unaerated tank, wherein biochemical reduction of said inorganic oxygen-containing compounds through the use of activated sludge as well as biochemical oxidation of organic matter are effected simultaneously. Biochemical reduction of inorganic oxygen-containing compounds having been effected, the mixed water together with the activated sludge is delivered from the unaerated tank to a settler and the precipitated sludge adapted to said inorganic oxygen-containing compounds is returned to said unaerated tank. The herein-disclosed method provides for treatment of industrial waste water featuring higher concentration of inorganic oxygen-containing compounds of chromium and chlorine as well as for a more intensified process of reduction of said compounds.

3,755,157

METHOD OF PRODUCING DRINKING WATER FROM CONTAMINATED GROUND AND SURFACE WATER

Werner Wisfeld, Frankfurt, Main; Hans Wirth, Dortelweil, and Walter Lotz, Frankfurt, Main, all of Germany, assignors to Laboratorium fur Adsorptionstechnik GmbH, Frankfurt am Main, Germany

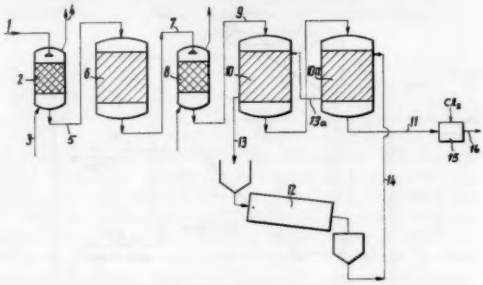
Filed July 22, 1971, Ser. No. 165,282

Claims priority, application Germany, Oct. 10, 1970, P 20 49 920.1

Int. Cl. C02c *5/04, 5/10*

U.S. Cl. 210—17 **8 Claims**

Organically contaminated water containing micro-organisms is purified by first oxygenating the raw water and passing it through a coarse-particle activated-carbon bed, thereafter further oxygenating the effluent from the first bed and passing it through a second bed, and chlorinate the effluent from the latter. The water traverses the bed with a specific loading of



less than 4 hr^{-1}, the chlorine or other disinfectant is added in an amount greater than 0.05 and less than about 0.5 mg/liter of chlorine, and only the second bed is reactivated or regenerated.

3,755,158

PROCESS FOR CAPTURING METAL IONS

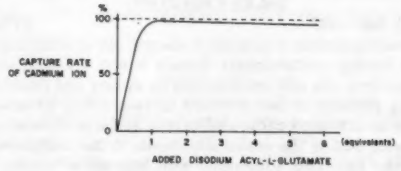
Shinichi Inazuka, Tokyo; Masahiro Takehara, and Ryonosuke Yoshida, both of Kanagawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 4, 1971, Ser. No. 169,034

Claims priority, application Japan, Aug. 10, 1970, 45/69916

Int. Cl. C02b *1/26*

U.S. Cl. 210—50 **12 Claims**



Cations of metals other than the alkali metals may be precipitated practically completely from their aqueous solutions at a pH of 4 or higher by N-acylamino acids whose acyl group is alkanoyl or alkenoyl having seven to 25 carbon atoms, the acylamino group being connected with the carboxyl group by divalent alkylene having one to five carbon atoms. The voluminous precipitates include even more of the metal ions originally present and settle faster in the presence of small amounts of polyhydric alcohols, polyethers, alkali metal silicates, or alkali metal borates. Water polluted with heavy metals can be made potable by this method.

3,755,159

FLOCCULATION BY METHYLAMINE-EPICHLOROHYDRIN POLYMER

Daniel Elmer Nagy, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 778,934, Nov. 26, 1968, Pat. No. 3,567,659. This application Dec. 8, 1970, Ser. No. 96,192

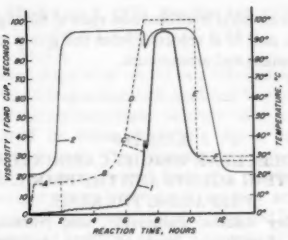
Int. Cl. C02b *1/20*

U.S. Cl. 210—54 **5 Claims**

A cationic, water-soluble, storage-stable, methyl-amine-epichlorohydrin polymer is prepared by reacting a quantity of a methylamine-epichlorohydrin polymer which is well below its gel point with successively added small amounts of epichlorohydrin until the polymer nears the stage at which it is an irreversile gel, and then reacting the polymer with suffi-

cient methylamine to inactivate substantially all amine-reactive epichlorohydrin residues present. At least the last step of the reaction is performed at a temperature at which a partial depolymerization of the polymer occurs.

Water-soluble polymers of higher molecular weight and



larger dimensions are produced by graft polymerizing one or more water-soluble vinyl monomers upon a hydrophilic water-dispersible cationic poly(hydroxyalkylene) polyamine, which is not necessarily the foregoing polyamine. The polymers are flocculants for suspended solids in sewage and mine effluent water and dry strength agents for paper.

3,755,160

PROCESS FOR FLOCCULATING USING A POLY(QUATERNARY AMMONIUM)POLYETHER POLYELECTROLYTE

Edward Witt, Dover, Del., assignor to Polysar International, S.A., Fribourg, Switzerland

Division of Ser. No. 51,344, June 30, 1970, Pat. No. 3,663,461, which is a continuation-in-part of Ser. No. 763,977, Sept. 30, 1968, abandoned. This application Sept. 29, 1971, Ser. No. 184,964

Int. Cl. C02b *1/20*

U.S. Cl. 210—54 **12 Claims**

Water-soluble poly(quaternary ammonium) polyether polyelectrolyte salts containing quaternary nitrogen atoms in the polymer backbone and chain-extended by ether groups are prepared by treating the polymeric reaction product from an N,N,N′,N′-tetraalkyl-hydroxy substituted diamine and an organic dihalide such as a dihaloalkane or a dihalo ether with an epoxyhaloalkane. These polyelectrolytes are used in processes for flocculating particles dispersed in aqueous media, for example, white water clarification, clay flocculation, sewage treatment, and wet-end addition, by adding the polyelectrolyte to the aqueous media in amounts sufficient to flocculate the dispersed particles.

3,755,161

TREATMENT PROCESS FOR REMOVAL OF METALS AND TREATING AGENT THEREFOR

Noriyuki Yokota, Ashiya; Shingo Tokuda, Nishinomiya; Yoshiro Ito, Amagasaki, and Hiroshi Takatomi, Osaka, all of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed Jan. 5, 1971, Ser. No. 104,160

Claims priority, application Japan, Feb. 10, 1970, 45/10146, Japan, Feb. 26, 1970, 45/17353, Japan, Feb. 26, 1970, Japan, 45/17354, Japan, April 13, 1970, 45/31412

Int. Cl. B01d *15/00*

U.S. Cl. 210—36 **7 Claims**

A treament process for removing metals from a gaseous phase or liquid phase metal-containing material using a solid treating agent consisting of a carrier material and a compound deposited thereon, such compound being selected from (a) an organic compound capable of forming a mercaptide compound of a metal, which compound has the —SH radical or an alkali salt thereof in its molecule and may also have a member or members selected from the group consisting of the —N=, —S—, -NH–, —N=N–and —NH–NH– radicals in the same molecule; (b) an organic compound capable of forming a mercaptide compound of a metal, which compound has the

radical in its molecule and also have a member or members selected from the group consisting of the —N=, —S—, —N-H—, —N=N—, and —NH—NH— radicals in the same molecule; and (c) an organic compound capable of forming a chelate compound of a metal, which compound has the —OH radical in its molecule and also a member or members selected from the group consisting of the —N= and $—NH_2$ radicals in the same molecule.

ERRATUM

For Class 210—63 see:
Patent No. 3,755,142

3,755,162

PROCESS FOR PREPARING A MIXTURE OF CYCLOHEXANONEO XIM-CYCLODODECANONEOXIM

Hans-Joachim Schultz, Chur Grisons; Ernst Hurlimann, Barnaus, and Albert Gehring, Tamins, all of Switzerland, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Mar. 3, 1971, Ser. No. 120,757

Claims priority, application Switzerland, Mar. 13, 1970, 3758/70

Int. Cl. C07c *131/00, 131/02, 131/04*

U.S. Cl. 252—1 **9 Claims**

Process for preparing a mixture of cyclohexanoneoxime-cyclododecanoneoxime containing at the most 70 parts by weight of cyclododecanoneoxime, by oximation of cyclohexanone and cyclododecanone with hydroxylamine sulfate, which comprises carrying out the oximation in two stages, the first stage being effected at a pH of 3–4.5 and 80°–90°C, and the second stage at a pH of 5–6 and a temperature of 90°–110° C.

3,755,163

POWDERED FIRE EXTINGUISHING AGENTS

Richard Broll, Darmstadt, and Gero Heymer, Knapsack near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Continuation of Ser. No. 830,127, June 3, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,761

Claims priority, application Germany, June 3, 1969, P 17 71 540.1

Int. Cl. A62d *1/00*

U.S. Cl. 252—7 **1 Claim**

Powdered fire-extinguishing agents based on ammonium phosphates and substantially containing ammonium polyphosphates with a degree of condensation higher than 50.

3,755,164

BEARING COMPOSITION

Jan W. Van Wyk, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 24, 1972, Ser. No. 246,656

Int. Cl. C10m *7/02*

U.S. Cl. 252—12 **5 Claims**

A self-lubricating solid bearing having oxidation resistant lubricants of aluminum phosphate, barium fluoride and calcium fluoride, dispersed throughout a matrix of silver containing an additive selected from aluminum oxide, silicon nitride or molybdenum silicide to give a bearing operable at elevated temperatures.

3,755,165

ALIPHATIC DIISOCYANATE FINISH ADDITIVE

Roop S. Bhakuni, Copley, and Joseph L. Cormany, Jr., Akron, both of Ohio, assignors to The Goodyear Tire and Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 78,251, Oct. 5, 1970. This application Oct. 29, 1971, Ser. No. 193,992

Int. Cl. D06m *13/42*

U.S. Cl. 252—8.6 **1 Claim**

Aliphatic diisocyanates as adhesion promoting agents are added to the finish or spinning composition applied to tire yarn used in making tire reinforcing cord as a means of promoting adhesion between the cord and the rubber when using a conventional R/F/L adhesive.

3,755,166

GREASE SEALANT

William J. Abbott, Ypsilanti, Mich., and George L. Rathfon, Bradford, Pa., assignors to Witco Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 266,889

Int. Cl. C10m *5/14, 7/24*

U.S. Cl. 252—11 **8 Claims**

A viscous resilient deformable grease composition having a penetration of about 250°–350 at 77°F., which develops a protective skin when exposed to air, comprising a lubricating oil having a viscosity range of 100–250 SSU at 210°F., thickened with an organophylic clay such as dimethyldioctodecyl ammonium montmorillonite, and containing a drying oil such as soya oil and a drier such as cobalt naphthenate. After homogenizing, this composition is an effective sealant, particularly for energy absorbing devices as used in automobile bumpers wherein bleeding of hydraulic fluid and moisture penetration are problems.

3,755,167

COORDINATED COMPLEXES OF NITROGENOUS COMPOUNDS

Ferdinand P. Otto, Woodbury, and Andreas Logothetis, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 22,398, March 24, 1970, Pat. No. 3,642,847. This application June 10, 1971, Ser. No. 151,959

Int. Cl. C10m *1/40, 1/32*

U.S. Cl. 252—33.2 **13 Claims**

Metal complexes useful as additives in industrial fluids to improve the detergency and neutralizing characteristics thereof are produced by reacting a metal salt of an acid with an organic nitrogen compound. The specific metal complexes of the invention are formed by reacting an alkylene polyamine with an aldehyde, followed by reacting this product with (1) the metal salt and (2) an alkenylsuccinic acid or aldehyde in the order 1, 2 or 2, 1.

3,755,168

LUBRICANT FOR EXTRUSION OF THERMOPLASTICS

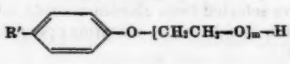
Donald E. Mixon, Bartlesville, Okla., and Estil N. Barnes, Inkster, Mich., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 3, 1971, Ser. No. 204,709

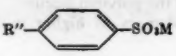
Int. Cl. C10m *3/34*

U.S. Cl. 252—33.4 **4 Claims**

An external lubricant useful in the extrusion of thermoplastic goods which consists essentially of water, a water-soluble polyol of the formula $R(OH)_n$ wherein R is a multivalent hydrocarbyl radical having two to five carbon atoms and a valence equal to n, and n is the integer 2 or 3, and at least one detergent selected from the group consisting of (*a*) a nonionic detergent of the formula



wherein R′ is an alkyl hydrocarbon radical having eight to 20 carbon atoms and m has a value in the range of six to 20 and (*b*) an anionic detergent of the formula



wherein R″ is an alkyl hydrocarbon radical having eight to 20 carbon atoms and M is selected from the group consisting of sodium, potassium and ammonium.

3,755,169

HIGH MOLECULAR WEIGHT CARBOXYLIC ACID ACYLATING AGENTS AND THE PROCESS FOR PREPARING THE SAME

Charles Wesley Adams, Painesville, and Norman Anthony Meinhardt, Lyndhurst, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 13, 1970, Ser. No. 80,500

Int. Cl. C10m *1/24, 1/32*; **C10l** *1/18*

U.S. Cl. 252—35 **23 Claims**

Process for preparing high molecular weight polycarboxylic acid acylating agents by contacting chlorine with a reaction mixture comprising (1) high molecular weight monocarboxylic acid and ethylenically unsaturated low molecular weight mono- or polycarboxylic acid acylating agent or (2) high molecular weight aliphatic hydrocarbon, ethylenically unsaturated low molecular weight monocarboxylic acid acylating agent, and ethylenically unsaturated low molecular weight polycarboxylic acid acylating agent. Acylating agents thus produced have utility, for example, as intermediates in the preparation of acylated nitrogen compounds, esters, metal salts, and the like which are useful as additives in lubricants and fuels.

3,755,170

PREPARATION OF HIGHLY BASIC ALKYLPHENATES AND SULFURIZED ALKYPHENATES

Lynn C. Rogers, and Mack W. Hunt, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed May 17, 1971, Ser. No. 148,262

Int. Cl. C10m *1/40, 1/38*

U.S. Cl. 252—42.7 **32 Claims**

Process for preparing highly basic alkaline earth metal alkylphenates or sulfurized alkylphenates wherein the process comprises:

a. forming an admixture of alkylphenol or sulfurized alkylphenol, nonvolatile diluent oil, volatile process solvent and water,

b. adding an overbasing amount of alkaline earth metal in a glycol ether at a temperature from about 20° to about 55° C.,

c. adding a neutralizing amount of alkaline earth metal in a glycol ether at a temperature of about 55° to about 100° C., and

d. removing the volatile materials by heating. The products are useful as additive agents for lubricating oils.

3,755,171

LUBRICANT ADDITIVE MIXTURE

Henryk A. Cyba, Evanston, and Robert H. Rosenwald, Western Springs, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed June 18, 1971, Ser. No. 154,619

Int. Cl. C10m *1/20, 1/32*

U.S. Cl. 252—51.5 R **4 Claims**

Lubricant containing a mixture of a di-(sec-alkylamino)-diphenylpropane or di-(cycloalkylamino)-diphenylpropane and polymeric condensation product of epihalohydrin compound and amine.

3,755,172

PREPARATION OF OVERBASED NITROGEN-CONTAINING ASHLESS DISPERSIONS

Warren W. Woods, and Mack W. Hunt, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 2, 1971, Ser. No. 168,423
Int. Cl. C10m *1/32, 1/36*
U.S. Cl. 252—51.5 A 16 Claims

An overbased dispersion useful as a lubricating oil additive is prepared by adding a metal alkoxide-carbonate complex to an alcohol or alcohol-aromatic solution of a metal free, oil soluble, neutral or basic dispersing agent containing an acylated nitrogen atom. The dispersing agent is preferably an amide, imide or ester derived from the reaction of a high molecular weight alkenyl carboxylic acid or acid anhydride with an organic nitrogen-containing compound having at least one amino group or hydroxyl group. Concurrently with, or following, addition of the alkoxide-carbonate complex, the complex is hydrolyzed to yield a dispersion of fine particles of metal carbonate. The solvents are then stripped from the dispersion to form a bright, clear composition having a base number of from about 50 to about 250 and useful as an ashless detergent-dispersant additive to lubricating oils.

3,755,173

ALKENYL HALOLACTONE ESTERS AND ACIDS AND LUBRICANTS CONTAINING THEM

Brian R. Kennedy, San Rafael, and Warren Lowe, El Cerrito, both of Calif., assignors to Chevron Research Corporation, San Francisco, Calif.

Filed Aug. 5, 1971, Ser. No. 169,544
Int. Cl. C10m *1/26, 1/30*
U.S. Cl. 252—54.6 15 Claims

Alkenyl halolactone esters of monools and polyols are described. These materials are useful as lubricating oil detergency and/or dispersancy additives.

3,755,174

PROCESS FOR LUBRICATING METAL WORKING OPERATIONS

Robert T. Trites, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed June 16, 1969, Ser. No. 834,240
Int. Cl. C10m *1/26*
U.S. Cl. 252—56 R 3 Claims

A process for lubricating metal working operations involving aluminum, copper and titanium which comprises lubricating such operations with a lubricant comprising a monoester of a dimer of ethylenic monocarboxylic acids having from about 16 to about 22 carbon atoms.

3,755,175

COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS

Frank S. Clark, and Loren W. Bannister, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 29, 1971, Ser. No. 167,462
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 15 Claims

Compositions comprising polyphenyl thioethers, polyphenylethers - thioethers or mixtures thereof and phenylboric acids and/or diphenylborinic acids exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,755,176

SULFUR-CONTAINING CARBOXYLIC ACIDS AS CORROSION INHIBITORS

Robert E. Kinney, Lawrenceville; Vernon F. Coty, Trenton, and Albert L. Williams, Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 14, 1971, Ser. No. 143,660
Int. Cl. C10m *1/38*
U.S. Cl. 252—48.6 9 Claims

Organic compositions comprising a liquid hydrocarbon have improved corrosion inhibiting properties when an alkyl thiohydrocarbyl acid, or amine salt thereof, is present in the composition.

3,755,177

PROCESS OF MAKING LIQUID ELECTROSTATIC DEVELOPERS CONTAINING GELATIN

Yasuo Tamai, Asaka, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 3, 1970, Ser. No. 8,414
Claims priority, application Japan, Feb. 4, 1969, 44/8345
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 4 Claims

A liquid developer containing a gelatin toner for developing electrostatic latent images is made by cooling an aqueous solution of gelatin to produce a gelatin gel, adding the gelatin gel to a solvent which is miscible with water but is incapable of dissolving the gelatin and mechanically pulverizing to form a dispersion of gelatin. The finely divided gel powder is collected and added to an insulating carrier liquid.

3,755,178

COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS

Frank S. Clark, and Loren W. Bannister, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 29, 1971, Ser. No. 167,465
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 12 Claims

Compositions comprising polyphenyl thioethers, polyphenylethers - thioethers or mixtures thereof and a triphenylborine exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,755,179

CHEMICAL COMPOSITION

Walter P. Fitzgerald, Jr., San Diego, Calif., assignor to LRC Research and Development Company, Wilmington, Del.

Continuation-in-part of Ser. No. 828,710, May 28, 1969, Pat. No. 3,640,879, which is a continuation-in-part of Ser. No. 791,512, Jan. 15, 1969, abandoned. This application Mar. 2, 1971, Ser. No. 120,327The portion of the term of this patent subsequent to Feb. 8, 1989, has been disclaimed.
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 4 Claims

A chemical composition comprising a mixture of alkali and/or alkaline earth metal hypochlorites and, as a stabilizing and/or reinforcing agent, alkali and/or alkaline earth metal pyrosulfates.

3,755,180

MEANS TO INHIBIT OVERGLAZE DAMAGE BY AUTOMATIC DISHWASHING DETERGENTS

Amory Earl Austin, Colonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,530
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 12 Claims

A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as

automatic dishwashers and capable of inhibiting overglaze attack, containing as an essential ingredient, a precipitated silico-aluminate compound.

3,755,181

DETERGENT COMPOSITION CONTAINING 1-2 GLYCOL BORATE ESTER

John Arthur Henricks, 742 N. Oak Park Ave., Oak Park, Ill.

Filed Mar. 15, 1971, Ser. No. 124,492
Int. Cl. G11d *7/06, 7/12*
U.S. Cl. 252—156 **1 Claim**

Borax forms 1-2-glycol borate esters that are excellant chelating agents in alkaline detergent formulae. These borate esters are used as a replacement for the conventional prior art sequestering phosphates in novel detergent compositions, in order to reduce the danger of eutrophication from the waste waters.

3,755,182

NITROGEN GENERATING COMPOSITIONS

Mervin D. Marshall, Fombell, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jan. 27, 1972, Ser. No. 221,391
Int. Cl. C09k *3/00;* **C01b** *21/00*
U.S. Cl. 252—188.3 **4 Claims**

Compositions of sodium azide and polyvalent metal sulfates burn when ignited to produce nitrogen.

3,755,183

METHOD OF PREPARING SILICATE ADSORBENTS AND DRYING AGENTS AND PRODUCT THEREOF

Rudolf Fahn, and Richard Amberger, both of Moosburg, Upper Bavaria, Germany, assignors to Sud-Chemie AG, Munich, Germany

Filed July 8, 1971, Ser. No. 160,894
Claims priority, application Germany, July 24, 1970, P 20 36 819.8
Int. Cl. C01b *33/32, 33/26*
U.S. Cl. 252—194 **4 Claims**

Silicate adsorbents and drying agents are prepared by forming precipitation products from aqueous alkali metal silicate solutions and solutions of salts containing di- and trivalent metals. The precipitation product is rendered alkali free and dried. The silicate product contains at least 50 percent by weight silica.

3,755,184

CLEANING TEFLON-COATED COOKWARE

William G. Mizuno, St. Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed June 18, 1971, Ser. No. 154,676
Int. Cl. C11d *7/52*
U.S. Cl. 252—171 **5 Claims**

Teflon-coated cookware is cleaned with a cleansing agent containing a lower chlorocarbon (e.g., trichloroethylene) , preferably in admixture with a thickening agent (e.g., aluminum stearate) and a cooking oil.

3,755,185

ANHYDROUS HYDROGEN PEROXIDE SOLUTIONS

Helmut Waldmann, Leverkusen; Wulf Schwerdtel, Koeln, and Wolfgang Swodenk, Odenthal-Globusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 29, 1971, Ser. No. 167,530
Claims priority, application Germany, Aug. 1, 1970, P 20 38 320.4
Int. Cl. C01b *15/02*
U.S. Cl. 252—186 **14 Claims**

Anhydrous solutions of hydrogen peroxide, containing about 3 to 60 percent by weight of H_2O_2 in a saturated nitrogen heterocyclic compound having 4 to 6 ring members and a carbonyl group adjacent to the nitrogen atom are obtained by adding the heterocyclic compound to an aqueous solution of hydrogen peroxide and removing the water, as by distillation. The heterocyclic compound is a lactam or N-acylated structure, N-methyl-pyrrolidone being preferred.

3,755,186

TETRAVALENT MANGANESE-CONTAINING STABLE LIQUID, PROCESS AND ARTICLE

Philip Hine, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 821,109, May 1, 1969, Pat. No. 3,630,739.
This application July 8, 1971, Ser. No. 160,910
Int. Cl. G02b *5/24*
U.S. Cl. 252—300 **11 Claims**

An aqueous, colored, stable liquid containing tetra-valent manganese and a water-soluble addition polymer hydrolyzate prepared by the reduction of potassium permanganate in aqueous media containing a water-soluble addition polymer hydrolyzate, and a photosensitive element containing a light-absorbing layer prepared from the liquid.

3,755,187

PREPARATION OF HALOPHOSPHATE PHOSPHORS USING DIGESTION FORMED APATITE

Rudolph Nagy, Lac du Flambeau, Wis., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1971, Ser. No. 205,128
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.4 P **7 Claims**

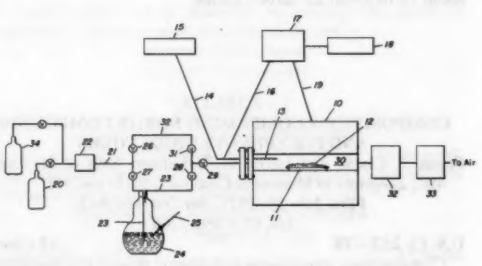
Apatite-type alkaline-earth metal halophosphate phosphors are prepared by a double digestion process. Unactivated alkaline-earth metal fluoro-apatite is formed by digesting an alkaline-earth metal acid phosphate and a fluoride of the same alkaline-earth metal. The unactivated fluoro-apatite is then digested in a solution containing activators to form activated alkaline-earth metal fluoro-apatite which is further processed to provide the phosphor. An improved apatite crystal structure is obtained by forming the apatite structure before the activators are added and the digesting of acid phosphates and fluorides provide a fast and inexpensive method of forming such an apatite. Preferably, the alkaline-earth metal is calcium and chlorine is added during firing so that a calcium fluoro-chloro-phosphate phosphor is formed.

3,755,188

DEHALOGENATION PROCESS

Leonard N. Grossman, and Donald A. Brigham, both of Livermore, Calif., assignors to General Electric Company, San Jose, Calif.

Filed July 17, 1970, Ser. No. 55,744
Int. Cl. G21c *19/42*
U.S. Cl. 252—301.1 R **12 Claims**



Process for dehalogenation of particulate compositions containing metallic oxyhalides to produce metallic oxides by con-

tacting the compositions in a heated atmosphere containing vaporized alcohol. A second gas including inert gases and active dehalogenating gases can be mixed with the vaporized alcohol. A preferred practice has agitation of the particulate compositions containing metallic oxyhalides during the dehalogenation process. The metallic oxide produced by dehalogenation can be freed from any hydrocarbon residues where desired by a subsequent heating step in a reducing atmosphere. The halide ions from the dehalogenation can be recovered as an acid by passing the dehalogenation atmosphere through water.

3,755,189

COMPOSITION FOR THE CONTROL OF OILS FLOATING ON WATER

Ralph E. Gilchrist, and Jack C. Cox, both of Houston, Tex., assignors to Tenneco Oil Company, Houston, Tex.

Filed Sept. 24, 1971, Ser. No. 183,620

Int. Cl. B01j *13/00*

U.S. Cl. 252—316 **4 Claims**

A composition of matter suitable for the confinement of oil floating on water consisting essentially of a drying oil, a carrier selected from the class consisting of liquid alcohols, ketones and ethers, and a water insoluble metallic soap catalyst. The composition is used to control oil slicks on water by dispersing said composition on the surface of the slick in an amount sufficient to confine the oil slick and thereby allow removal thereof.

3,755,190

CAPSULE MANUFACTURE

Ronald L. Hart, Dayton; Donald D. Emrick, Kettering, and Robert G. Bayless, Yellow Springs, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Nov. 9, 1971, Ser. No. 197,160

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **12 Claims**

A process is disclosed for performing encapsulation, en masse, by an in situ polymerization reaction of polyhydroxy phenolic materials with aldehyde materials. The polyhydroxy phenolic material is provided, for reaction in the system, as a water-soluble complex combined with a highly hydrolyzed form of poly(vinyl alcohol). Liquid-liquid phase separation is accomplished and maintained by increase in the molecular weight of the phenolic/aldehyde reaction product without use of any phase-separation-inducing materials. The poly(vinyl alcohol) serves a dual purpose of controlling the polyhydroxy phenolic/aldehyde polymerization reaction and acting as a sort of toughening additive for the completed capsule wall material.

3,755,191

METHOD FOR DIRECT PREPARATION OF ANTI-STAIN PLASTICIZER COMPOSITION

Paul Mottez, Loison-sous-Lens, and Regis Lejeune, Lens, both of France, assignors to Societe Chimique Des Charbonnages C.d.F. Chimie, Tour Aurore-Paris, France

Filed Nov. 17, 1971, Ser. No. 199,724

Claims priority, application France, Nov. 19, 1970, 7041512

Int. Cl. B01f *1/00;* **C08f** *45/40;* **C08k** *1/36*

U.S. Cl. 252—364 **4 Claims**

Anti-stain plasticizer for polymers, its method of preparation and its use in vinyl polymers. This plasticizer is constituted by a mixture of butyl benzyl phthalate and dibenzyl phthalate, the amount of dibenzyl phthalate in the mixture being comprised between 20 and 60 percent by weight. It is obtained in a single esterification reaction by preparing a mixture of butyl acid phthalate and phthalic anhydride, which is subsequently reacted with benzyl chloride. This plasticizer is used for obtaining polyvinyl chloride or other flexible vinyl polymers having clearly improved anti-stain properties.

3,755,192

PRODUCTION OF CATALYST TABLETS

Walter Rottig, Oberhausen-Sterkrade-Nord, and Hans-Heinrich Saenger, Mulheim/Ruhr-Speldorf, both of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

Continuation-in-part of Ser. No. 714,781, March 21, 1968, abandoned. This application Jan. 20, 1972, Ser. No. 219,495

Claims priority, application Germany, Apr. 1, 1967, R 45649

Int. Cl. B01j *11/06;* **C10m** *7/04, 7/14, 7/26*

U.S. Cl. 252—428 **7 Claims**

Production of catalyst tablets by admixing the catalyst particles, with or without substrate, with graphite and a polyethylene, polyproplene, polyethylene glycol and/or polypropylene glycol; and then tabletizing the mass.

3,755,193

PROCESS FOR THE FABRICATION OF NITROGEN CONTAINING PULVERIZED CARBON

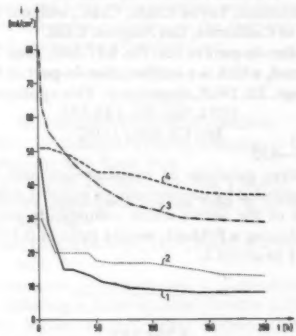
Gunter Luft, Lauf; Gerhard Richter, and Erhard Weidlich, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 4, 1972, Ser. No. 223,548

Claims priority, application Germany, Feb. 22, 1971, P 21 08 417.3

Int. Cl. C01b *31/08*

U.S. Cl. 252—422 **6 Claims**



A process for the fabrication of nitrogen containing pulverized carbon for incorporation thereof as an electrode material for electrochemical cells, particularly fuel cells. A carbonizable, nitrogen containing organic polymer is completely dissolved while being heated in a concentrated salt solution of an inorganic halides or thiocyanate. The resultant highly viscous fluid is carbonized at temperatures between 700° and 1200°C and the resultant product is crushed.

3,755,194

HYDROGENATION CATALYST

Valery Andreevich Avilov, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 2a, kv. 2; Mikhail Lvovich Khidekel, Noginsky Raion, p/o Chernogolovka, ul. Vtoraya, 1, kv. 3; Olga Nikolaevna Eremenko, Noginsky Raion, p/o Chernogolovka, ul. Tretya, 2, kv. 1; Oleg Nikolaevich Efimov, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 12, kv. 1; Alina Grigorievna Ovcharenko, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 11, kv. 3, and Pavel Semenovich Chekry, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 10a, kv. 2, all of Moskovskaya obl., U.S.S.R.

Filed Feb. 12, 1969, Ser. No. 798,773

Int. Cl. B01j *11/12*

U.S. Cl. 252—429 R **5 Claims**

Hydrogenation catalysts are prepared by forming a complex from equimolar amounts of a platinum group metal halide,

e.g. rhodium trichloride, and a π-bonding aromatic ligand, e.g. aromatic hydrocarbons, alkyl-substituted aromatic quinones, aromatic carboxylic acids, aromatic amino acids, aromatic amino acid peptides and aromatic compounds exhibiting benzenoid-quinoid mesomerism. The complexes are reduced to catalytically active form either during or subsequent to formation.

3,755,195

SPARK PLUG ANTI-FOULANT

Vincent F. Hnizda, Huntington Woods, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 785,801, Dec. 20, 1968, Pat. No. 3,615,293. This application July 1, 1971, Ser. No. 158,983. The portion of the term of this patent subsequent to Oct. 26, 1988, has been disclaimed.

Int. Cl. C09k *3/00*

U.S. Cl. 252—386 **13 Claims**

A method of reducing spark plug fouling in spark ignition engines fueled with organomanganese containing gasoline is described. The method features the use in gasoline of a spark plug anti-fouling amount of an organic molybdenum compound.

Molybdenum naphthenate is an example of a useful anti-foulant compound.

3,755,196

HYDROTREATING CATALYST

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 837,340, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 761,322, Sept. 20, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,515

Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **20 Claims**

Highly active catalysts of molybdenum and Group VIII metals are prepared by impregnating a support with highly stable solutions of the active metal compounds and an acid of phosphorus having a P/MoO_3 weight ratio of 0.1–0.25 and an initial pH of 1 to about 2.

3,755,197

CATALYST SYSTEM COMPRISING AN ORGANOALUMINUM OR AN ORGANOZINC AND A METAL SALT OF A CARBOXYLIC ACID

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 462,122, June 7, 1965. This application Feb. 20, 1969, Ser. No. 801,182

Int. Cl. C08d *1/14*

U.S. Cl. 252—431 C **15 Claims**

A polymerization catalyst comprising (a) an organometallic compound selected from the group consisting of organoaluminum and organozinc compounds and (b) a metal salt of a carboxylic acid.

3,755,198

PROCESS FOR ADDING CADMIUM TO SUPPORTED NOBLE METAL DEHYDROGENATION CATALYST

Jan L. Stratenus, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed May 26, 1971, Ser. No. 147,183

Claims priority, application Netherlands, June 9, 1970, 7008386

Int. Cl. B01j *11/12*

U.S. Cl. 252—466 PT **3 Claims**

Cadmium or zinc is added to a supported noble metal dehydrogenation catalyst by contacting the catalyst with an inert gas containing metallic cadmium or zinc vapors.

3,755,199

UNREDUCED CATALYST FOR AMMONIA SYNTHESIS AND PROCESS FOR ITS MANUFACTURE

Constantin Stefanescu; Ion Vartolomei; Gheorghe Urziceanu, and Gheorghe Badea, all of Craiova, Romania, assignors to Combinatul Chimic Craiova, Craiova, Romania

Continuation-in-part of Ser. No. 806,737, March 12, 1969, abandoned. This application Aug. 18, 1971, Ser. No. 172,895

Int. Cl. B01j *11/40, 11/22*

U.S. Cl. 252—455 R **5 Claims**

A catalyst for ammonia synthesis having a high catalytic activity and good physical-chemical characteristics is prepared by gradually melting an iron bar above a steel crucible cooled on the outside with water. The melting is carried out uninterruptedly over a period of 16 minutes by directing onto the melting end of the bar an oxygen stream, e.g. at a pressure of 0.15 atm. An oxidizing melting reaction of the iron occurs which being exothermal has the effect of raising the temperature. The ferrous oxide flows into the crucible and concomitantly are added the promoters, i.e. Al_2O_3, K_2CO_3, SiO_2, CaO. An inhomogeneous fluid mass results. The crucible is then closed and oxygen is fed in, producing inside the crucible (over a period of 3 minutes) a pressure of 2 kg/sq cm. Feeding of oxygen is then stopped and the crucible is immediately discharged. The molten mass is cooled, crushed, sized and packed.

3,755,200

LIQUID STABILIZER SYSTEM FOR POLYVINYL CHLORIDE

Philip H. Rhodes, and Robert L. Ahr, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 14, 1972, Ser. No. 226,273

Int. Cl. B01j *1/16*

U.S. Cl. 252—400 **8 Claims**

Homogeneous liquid stabilizer compositions are provided which are useful with polyvinyl chloride resins to impart improved antistatic and antifogging properties in addition to stabilizing the resins. The stabilizer solutions are obtained using a specific procedure for blending the individual stabilizer components.

3,755,201

LAUNDRY PRODUCT CONTAINING MIXED DYE BLUING AGENTS

Robert Henry Trimmer, Edison; William Franklin Gross, Jr., W. Piscataway, and William J. Gangwisch, New Brunswick, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed July 26, 1971, Ser. No. 166,002

Int. Cl. C11d *3/066*

U.S. Cl. 252—526 **8 Claims**

A laundry product, such as a detergent composition, containing a mixture of dyes which results in laundry washed with the detergent being "blued" to a desired extent and with the desired shade of blue. The dyes employed are used in very smali quantities, have little effect on the color of the laundry product, if it is in solid particulate form, are stable in alkaline media, such as crutcher mixes, and are readily bleachable by hypochlorite bleaches, so that objectionable overbluing effects need not be obtained on repeated washings. Preferred dyes employed are those of Index Numbers 24410 (Geigy, C.I. Direct Blue 1) and 29120 (Geigy, C.I. Direct Violet 66).

3,755,202

METHOD FOR REACTIVATION OF OXIDE CATALYSTS

Jakov Rafailovich Katsobashvili, and Galina Mikhailovna Belova, both of Moscow, U.S.S.R., assignors to Institute Neftekhimivhrdkoho Sinteza Imeni A.V. Topchieva, Moscow, U.S.S.R.

Continuation of Ser. No. 728,909, May 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 679,578, Oct. 31, 1967, abandoned, which is a continuation of Ser. No. 411,716, Nov. 17, 1964, abandoned. This application July 1, 1971, Ser. No. 159,042

Int. Cl. B01j *11/04, 11/68*

U.S. Cl. 252—417 6 Claims

A method for reactivation of oxide catalysts which have been deactivated by carbonaceous materials deposited thereon in the course of hydrocracking crude oils, coal tars or shale tars and for simultaneously obtaining technical grade hydrogen of 90–95 vol. % purity containing a maximum of 5 percent of carbon monoxide. Catalyst reactivation is effected by a steam-oxygen mixture having a steam-to-oxygen ratio of 7:1 to 10:1, preferably of 9:1, at a temperature of from 600° to 750°C, and under 20–30 atm pressure. Catalyst reactivation yields a gas consisting essentially of carbon dioxide and hydrogen and containing insignificant proportions of H_2S, CO and CH_4, the removal of CO_2 and H_2S from the product gas being effected by absorption with water and an alkaline agent under a pressure of 20–30 atm. The method makes it possible to dispense with the CO conversion step.

3,755,203

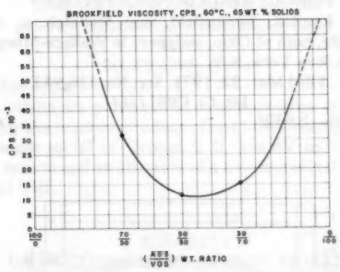
DETERGENT SLURRY COMPOSITIONS

Floyd Edward Bentley, and Harold George Waddill, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 99,081, Dec. 17, 1970, abandoned. This application Apr. 29, 1971, Ser. No. 138,606

Int. Cl. C11d *1/14, 3/065*

U.S. Cl. 252—536 4 Claims



A novel detergent slurry composition, also known as a crutcher slurry, comprising alpha-olefin sulfonates is provided by incorporating significant amounts of sulfonated vinylidene-olefins whereby the resulting composition is characterized by reduced viscosity.

3,755,204

POROUS CERAMIC-EXHAUST OXIDATION CATALYST

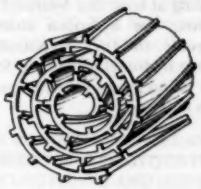
Francis J. Sergeys, Kensington, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,918

Int. Cl. B01j *11/40, 11/08*

U.S. Cl. 252—455 R 4 Claims

Method of preparing temperature resistant exhaust oxidation catalysts suitable for use in land vehicle exhaust systems comprising a porous ceramic base impregnated with suitable oxidizing agents and the resulting catalysts. The porous



ceramic base is prepared from a ceramic powder filled, plasticized polyolefin.

3,755,205

METHOD OF MAKING A CATALYTIC BED

William A. Duncan, and James A. Murfree, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 28, 1972, Ser. No. 238,926

Int. Cl. B44d *1/40, 1/44;* B01j *11/06, 11/50*

U.S. Cl. 252—458 4 Claims

Method for making a catalytic bed for a gas generator by saturating an inert porous support material with a molybdenum resinate and turpentine solution, and decomposing the solution to leave a residue coating on the inert porous support material and thereby form a catalytic bed.

3,755,206

DETERGENT COMPOSITIONS

Denise Verdier, Le Bourget, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,939

Claims priority, application France, Mar. 9, 1970, 7008310; Nov. 9, 1970, 7040196

Int. Cl. C11d *1/14, 1/37, 1/655, 1/831*

U.S. Cl. 252—545 9 Claims

A liquid detergent system having a controllable viscosity and clarity, including a water-soluble paraffin sulfonate and a water-soluble, higher alkane, ether sulfate. Control of the viscosity and clarity is accomplished by using a control system comprising a lower aliphatic alcohol and urea.

ERRATUM

For Class 252—51.5 R see:
Patent No. 3,755,433

ERRATUM

For Class 252—363.5 see:
Patent No. 3,755,529

3,755,207

VULCANIZABLE EPIHALOHYDRIN POLYMER COMPOSITION

Tetsuo Karatsu, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1972, Ser. No. 229,381

Int. Cl. C08g *23/20*

U.S. Cl. 260—2 A 11 Claims

A vulcanizable epihalohydrin-polymer elastomer comprising (1) an epihalohydrin-polymer elastomer, (2) at least one metal cyanate selected from the group consisting of cyanates of matals of Groups IA, IB, IIA, IIB and IVB of the periodic ta-

ble, and (3) a functional compound selected from the group consisting of (i) compounds obtained by substituting at least two hydroxyl groups or mercapto groups for hydrogen atoms in a saturated hydrocarbon molecule, (ii) compounds obtained by substituting at least one hydroxyl group and at least one mercapto group for hydrogen atoms in a saturated hydrocarbon molecule, and (iii) compounds obtained by substituting at least one hydroxyl group and for mercapto group and one amino or imino group for hydrogen atoms in a saturated hydrocarbon molecule.

3,755,208

AVOIDANCE OF CELL COLLAPSE IN AN EXTRUSION PROCESS FOR A COPOLYMER BASED ON A LOW MOLECULAR WEIGHT α-OLEFIN AND POLAR VINYL MONOMER

Herbert A. Ehrenfreund, Madison, Conn., assignor to Haskon, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 706,612, Feb. 19, 1968, abandoned. This application Oct. 23, 1970, Ser. No. 83,644

Int. Cl. C08f *45/00, 47/10*

U.S. Cl. 260—2.5 E **2 Claims**

Post extrusion cell collapse of vinyl copolymer foams is prevented by incorporation of a small amount of a partial ester of a long chain fatty acid and a polyol.

3,755,209

FOAMABLE PARTICULATE STYRENE POLYMERS FOR THE PRODUCTION OF MOLDINGS EXHIBITING GOOD DIMENSIONAL STABILITY AND GOOD FUSION

Eckhard Nintz, Ludwigshafen; Hans-Georg Keppler, Weinheim; Ludwig Zuern, Bad Duerkheim, and Erhard Stahnecker, Ziegelhausen, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 31, 1972, Ser. No. 222,327

Claims priority, application Germany, Feb. 3, 1971, P 21 04 867.9

Int. Cl. C08j *1/18*

U.S. Cl. 260—2.5 B **2 Claims**

The invention relates to foamable particulate self-extinguishing styrene polymers which, on account of their low content of oxyalkylation product of ammonia or amine, are suitable for making foam articles exhibiting good fusion and good dimensional stability, and to a process for their production.

3,755,210

CELLULAR POLYMERIC MATERIALS

Alfred Gerald Edwards, Stourport-on-Severn, England, assignor to Albright & Wilson Limited, Warwickshire, England

Filed Mar. 10, 1972, Ser. No. 233,730

Claims priority, application Great Britain, Mar. 26, 1971, 7,891/71

Int. Cl. C08g *5/18, 53/08*

U.S. Cl. 260—2.5 F **19 Claims**

Known polymeric materials can be made by the reaction of a compound of the formula R' $[-CH_2OR]_a$ or R'' $[CH_2X]_a$ where R'and R'' are di or trivalent aromatic hydrocarbon or hydrocarbon ether radicals, R is C_{1-6} alkyl and X is Cl, Br or I and *a* is 2 or 3 with a phenolic compound. Such polymers can be cured by reaction with hexamethylene tetramine.

If the polymeric compound used comprises both phenol and β naphthol, a cellular polymer may be obtained on curing.

Such cellular polymers may be used for example in high strength light weight load bearing structures.

3,755,211

LATEX REINFORCED FLEXIBLE POLYURETHANE FOAM

Hubert J. Fabris, Akron, and Edwin M. Maxey, Kent, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Oct. 7, 1971, Ser. No. 187,527

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 BE **11 Claims**

This invention comprises the production of low density flexible polyurethane foams having improved load carrying capacity by adding to the unfoamed mixture, comprising a polyhydroxy compound, an organic polyisocyanate and water, a polymer in the form of an unfoamed latex of about 30 to 65 percent solids content, the latex polymer having a glass transition temperature of at least 50° C. and having a particle size in the range of from about 200 to 800 angstroms, any other latex polymer particles outside said range being present in minor amounts.

3,755,212

AIR BLOWN POLYURETHANE FOAMS

James R. Dunlap, and Donald B. Parrish, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 13, 1971, Ser. No. 143,230

Int. Cl. C08g *22/44, 22/10*

U.S. Cl. 260—2.5 BD **8 Claims**

Air blown polyurethane foams having densities below 15 lbs/ft^3 are prepared from ester-modified polyether polyols, a polyisocyanate and a catalyst for urethane formation, in the absence of a cell control agent.

3,755,213

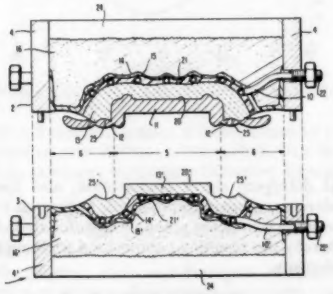
POROUS RESIN BONDED PRODUCT

Virgil D. Kendall, Springfield, and Rudolph A. Skriletz, Marysville, both of Ohio, assignors to Wallace-Murray Corporation, New York, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,942

Int. Cl. C08j *1/14*

U.S. Cl. 260—2.5 EP **11 Claims**



An improved rigid, porous product and process for making such product are disclosed. The product comprises a particulate material bound by a thermosetting resin and characterized by uniformly distributed and interconnecting porosity. The body initially is made by isostatic pressing of a mixture of the particulate material and resin and, inter alia, the cured body is suitable for use as a die, mold or filtering device.

3,755,214

THIOPHENE CONDENSATES AS FLAME RETARDANTS FOR POLYURETHANE FOAM

Edward L. Sukman, Fanwood, and Irving Touval, Edison, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

Filed Nov. 12, 1971, Ser. No. 198,469
Int. Cl. C08g *22/44*, *51/52*; C07d *63/14*
U.S. Cl. 260—2.5 AJ 9 Claims

Condensation products obtained by reacting thiophene with aldehydes or ketones react with bromine or chlorine under relatively mild conditions. The novel products are effective flame retardants for synthetic polymers, particularly polyurethane foams.

3,755,215

PREPARATION OF OIL-MODIFIED POLYMERS FROM A POLYISOCYANATE COMPOSITION

Bruce Albert Khoury, Wilmington, Del., and Frederic Warren Yeager, Pennsville, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 29, 1971, Ser. No. 203,033
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AT 5 Claims

A polyisocyanate composition having beneficial utility in the manufacture of polyurethane foams and other polymer products, and comprising certain proportions of tolylene diisocyanate (TDI), a phosgenation residue component and a specified type of hydrocarbon oil. Also a process for making polyurethane and polyurea products by causing said polyisocyanate composition to react with a polymeric polyol or other suitable active hydrogen-containing compound.

3,755,216

CYCLIC ETHER POLYMERIZATION PROCESS USING METAL ALCOHOLATE-METAL HYDROCARBYLXANTHATE REACTION PRODUCT CATALYST

Anne C. Udding, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed July 23, 1971, Ser. No. 165,706
Claims priority, application Netherlands, Sept. 16, 1970, 7013718
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A 8 Claims

Cyclic ethers are polymerized in the presence of a catalyst comprising the reaction product of an O-hydrocarbyl xanthate of a divalent metal of Groups I, II, and IV to VIII of the periodic system and an alkoxide of a trivalent metal of Groups III, IV and VIII.

3,755,217

DIFUNCTIONAL AND TRIFUNCTIONAL POLYSILOXANES AS ADDITIVES TO LATEX FOAM RUBBER

David T. Schrader, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 42,447, June 1, 1970. This application Oct. 14, 1971, Ser. No. 189,401
Int. Cl. C08d *13/08*, *13/10*
U.S. Cl. 260—2.5 L 2 Claims

A foam rubber backing for a carpet wherein the foam rubber has therein a trifunctional or difunctional polysiloxane selected from the group having the formulas:

$$R'_aR_bSiO_{(4-a-b)/2}$$

or

$$R'_cR_d(OH)_eSiO_{(4-c-d-e)/2}$$

or

$$R^2_fR^3_gSiO_{(4-f-g)/2}$$

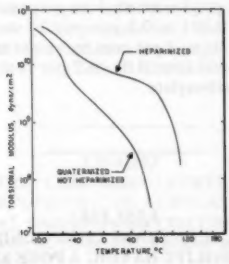
wherein R, R′ R³ are monovalent hydrocarbon radicals, R² is a monovalent hydrocarbon radical including a hydroxy radical, a varies from 0.05 to 3.3×10^{-5}, b varies from 2.05 to 2.00, c varies from 0.05 to 3.3×10^{-5}, d varies from 1.91 to 2.00, e varies from 0.14 to 9.9×10^{-5}, f varies from 0.25 to 1.9×10^{-4} and g has the value of 2.00. The liquid polysiloxane may be added to the rubber latex in the form of an emulsion having a nonionic or anionic type of surfactant therein.

3,755,218

IONICALLY BONDED BLOCK ELASTOMERIC COPOLYMERS OF A POLYQUATERNARY POLYURETHANE AND HEPARIN

Shiao-Ping Siao Yen, and Alan Rembaum, both of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Aug. 14, 1970, Ser. No. 63,722
Int. Cl. A61k *17/18*; C08b *25/00*
U.S. Cl. 260—9 12 Claims



A neutral elastomer is prepared by the urethane linking reaction of diisocyanates with tertiary amino diols. The neutral elastomer is quaternized and is then reacted with an anionic polymer such as heparin to form ionically bonded block elastomeric copolymers. The heparin copolymer has non-thrombogenic characteristics. It can be dissolved in solvents and utilized to form a non-clotting coat on the blood lines in kidney machines.

3,755,219

RESIN BLEND CONTAINING ETHYLENE/VINYL CHLORIDE INTERPOLYMER

Joseph G. Bergomi, Jr.; Dale R. Dill, both of St. Louis, and Paul R. Graham, Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 877,486, Nov. 17, 1969, Pat. No. 3,665,060
Filed Feb. 28, 1972, Ser. No. 230,139
Int. Cl. C08f *15/00*
U.S. Cl. 260—8 11 Claims

Modified ethylene/vinyl chloride interpolymers blended with unsaturated polybasic carboxylic acid interpolymers useful as pigment binders or adhesives in pigment coating compositions for paper, paperboard and similar materials, said modified interpolymer being used along or in combination with paper coating starch or protein material.

3,755,220

CELLULOSIC SHEET MATERIAL HAVING A THERMOSETTING RESIN BONDER AND A SURFACTANT DEBONDER AND METHOD FOR PRODUCING SAME

Bernard Freimark, Claymont, Del., and Richard W. Schaftlein, Chadds Ford, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 13, 1971, Ser. No. 189,045
Int. Cl. C08g *51/18*; D21d *3/00*
U.S. Cl. 260—17.3 6 Claims

Cellulosic sheet materials having an improved ratio of wet tensile strength to dry tensile strength comprise cellulosic

fibers; at least one debonder selected from the group consisting of anionic and cationic surface active agents; and a cationic thermosetting resin such as those normally employed to increase the wet strength of paper.

3,755,221

FAST CYCLING POLYAMIDE MOLDING COMPOSITION WHICH CONTAINS A PARTICULATE NUCLEATING AGENT, AN ALKYLENE DIAMIDE, AND A METAL SALT OF A MONOCARBOXYLIC ACID

Michael John Hitch, Welwyn Garden, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 30, 1971, Ser. No. 214,415

Claims priority, application Great Britain, Jan. 18, 1971, 2,277/71; Apr. 15, 1971, 9,492/71

Int. Cl. C08g *20/12*

U.S. Cl. 260—18 N **14 Claims**

A fast-cycling polyhexamethylene adipamide composition containing from 0.001 to 0.5 per cent by weight of an inert nucleant, from 0.01 to 4 per cent by weight of a specified alkylene diamide, and from 0.01 to 2 per cent by weight of a specified metal carboxylate.

3,755,222

DENSE POLYURETHANE COMPOSITIONS WHICH CONTAIN ZEOLITE HAVING A PORE SIZE OF 3 A

Hermann Gruber, and Horst Weber, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 41,651, May 28, 1970, abandoned. This application Aug. 15, 1972, Ser. No. 280,920

Claims priority, application Germany, June 3, 1969, P 19 28 129.9

Int. Cl. C08g *51/04*

U.S. Cl. 260—18 TN **7 Claims**

A process is provided for the production of non-cellular polyurethane resins wherein an organic polyisocyanate is reacted with a compound containing at least two hydrogen atoms reactive with NCO groups in the presence of a dehydrated zeolite of the sodium potassium aluminosilicate type having an average molar composition of about (0.05 to 0.40) Na_2O. (0.50 to 0.95) K_2O . Al_2O_3 . (1.9±0.1) SiO_2 with a molar ($Na_2O + K_2O$) / Al_2O_3 ratio of about (0.9±0.1):1, a crystalline structure identifiable by the most intense X-ray interferences at d = 12.3, 8.7, 7.1, 5.5, 4.1, 3.7, 3.4, 3.3, 3.0, 2.9, 2.8 A. ±0.1 A. and a pore size of about 3 A.

3,755,223

EPOXY ABLATIVE COATING CONTAINING A SILICONE RESIN, A FIBROUS REINFORCING MATERIAL, AND A NON-ALKALI METAL PHOSPHATE AND BORATE SALT MIXTURE

Samuel L. Engel, Burbank, Calif., assignor to The Dyna-Therm Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 599,376, Dec. 6, 1966, abandoned. This application Dec. 5, 1969, Ser. No. 882,709

Int. Cl. C08g *47/10;* **B32b** *27/38*

U.S. Cl. 260—18 PN **24 Claims**

An ablative coating composition and a substrate coating with such composition are disclosed. The composition includes an epoxy resin, a curing agent, a silicone resin, fibrous reinforcing material and a salt mixture containing at least one non-alkali metal inorganic phosphate and borate.

3,755,224

BIOCIDE FOR PLASTICIZED PVC

John T. Lutz, Jr., Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 12, 1971, Ser. No. 123,861

Int. Cl. C08f *45/64*

U.S. Cl. 260—23 EP **21 Claims**

Vinyl chloride compositions having biocidal properties comprise a vinyl chloride resin and a 3-isothiazolone. Preferably the vinyl chloride compositions are formed by blending the vinyl chloride resin with a liquid plasticizer, such as epoxidized soybean oil, containing the 3-isothiazolone.

3,755,225

PROCESS FOR PREPARING HOMO- AND COPOLYMERS OF VINYL CHLORIDE IN AQUEOUS EMULSION WITH POST ADDITION OF A WATER-SOLUBLE ETHYLENE OXIDE-ETHYLENE GLYCOL ADDUCT

John K. Pierce, Jr., Baytown, Tex., and Libardo Toro, Rio Piedras, P.R., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 878,222, Nov. 19, 1969, abandoned. This application Aug. 17, 1971, Ser. No. 172,558

Int. Cl. C08f *3/28*

U.S. Cl. 260—23 EM **8 Claims**

An aqueous emulsion polymerization process is described for the preparation of vinyl chloride homo- and copolymers which find particular utility as molding resins wherein the emulsifier system comprises, in combination, from 0.05 percent to 3 percent of an alkali metal salt of a sulfated fatty alcohol having from 8–18 C atoms per molecule; and from 0.05 percent to 2 percent of either tallow fatty alcohol or an epoxidized oil of an unsaturated fatty acid, the percentage of each ingredient being based on the weight of the monomer. After the polymerization reaction is substantially completed but prior to spray-drying of the polymerization mixture, there is blended into said mixture from 0.05 percent to 3 percent, by weight of the initial monomer charge, of an ethylene oxide adduct of ethylene glycol having a molecular weight ranging up to about 600. Plastisols of the resin products exhibit excellent dispersion rheologies and air-release properties. Moldings prepared from these resins may, in many instances, be utilized in contact with foodstuffs.

3,755,226

EPOXY BITUMEN SYSTEM FOR ROAD SURFACING

Paal Christiansen, Nidelbadstrasse 25, Ruschlikon, Zurich, and Johan Spoelder, Seegutstrasse 17, Au, Zurich, Horgen, both of Switzerland

Filed Nov. 24, 1971, Ser. No. 201,967

Claims priority, application Great Britain, Dec. 10, 1970, 58657/70

Int. Cl. C08g *51/52*

U.S. Cl. 260—28 **13 Claims**

The present invention relates to bituminous polyepoxide compositions and their use. In particular, the bituminous polyepoxide compositions of this invention may be used for coating substrates such as asphalt, concrete and metals, for example, steel. The bituminous polyepoxide coating compositions of the invention may be advantageously used for surfacing roadways, walkways and aircraft runways for producing self-levelling floors, for coating pipes and lining tanks, for electrical insulation, and as joint compounds.

3,755,227

FLAME RETARDED BLOCK COPOLYMERS AND ADDITIVE SYSTEM THEREFOR

Roy A. Gray, and Donnie G. Brady, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 27, 1972, Ser. No. 238,536

Int. Cl. C08f *45/30*

U.S. Cl. 260—28.5 A **2 Claims**

Flame-retardancy is imparted to ethylene-propylene block copolymers by incorporation therein as the flame-retardant

system a mixture of (A) a chlorinated paraffin, (B) a brominated bis(cycloalkenyl) compound, and (C) antimony trioxide.

3,755,228

ETHERIFIED CROTONYLIDENEDIUREA RESINS IN EMULSION TEXTILE PRINTPASTES

Eli Levine, Union, N.J., and Robert F. Singer, Greenville, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 20, 1971, Ser. No. 135,784
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.4 UA **11 Claims**

Oil-in-water emulsion textile printpastes are prepared wherein the active amino resin bonding component is etherified trimethylolated crotonylidenediurea.

3,755,229

FOUNDRY CORE COMPOSITIONS

Calvin K. Johnson, Palos Heights, and Robert A. Laitar, Chicago, both of Ill., assignors to CPC International Inc., Englewood Cliffs, Calif.

Filed July 20, 1971, Ser. No. 164,458
Int. Cl. C08g *51/24, 51/04*
U.S. Cl. 260—29.3 **5 Claims**

A foundry core composition comprising sand and a binder comprising phenolic resole resin, furfuryl alcohol and a catalyst selected from the group consisting of stannic chloride and stannous chloride.

3,755,230

STABILIZED POLYACRYLONITRILE COMPOSITIONS WITH SULFUR-PHOSPHORUS CONTAINING MATERIAL

Darrell R. Thompson, Somerville, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,621
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 AN **23 Claims**

A method of forming stabilized polyacrylonitrile compositions which are particularly suited for the spinning of polyacrylonitrile fibers and films and the compositions produced thereby wherein acrylonitrile polymers containing at least 85 percent acrylonitrile are dissolved in a solvent which is acetonitrile or an acetonitrile — water mixture and which contains as a color stabilizer a compound having the following general formula:

wherein R_1, R_2, and R_3 are monovalent organic radicals which may be substituted or unsubstituted independently selected from the group consisting of alkyl, cycloalkyl, aryl, and combinations thereof. Preferably, the solvent and polymer are purged with nitrogen and the pH of the solvent is adjusted to about 6.0 – 7.0.

3,755,231

RUBBERY COMPOSITIONS AND APPLICATIONS THEREOF

John Muir, Woodbridge; John Kavalir, Weston, and Premysl Thomas Dolezal, Sarnia, Ontario, all of Canada, assignors to Shaw Pipe Industries, Ltd., Ontario, Canada

Filed Jan. 21, 1972, Ser. No. 219,820
Claims priority, application Canada, Aug. 3, 1971, 119,622
Int. Cl. C08f *45/52, 45/28*
U.S. Cl. 260—28.5 AS **12 Claims**

Liquid composition suitable for application to steel surfaces such as pipe interiors, which cure in situ to provide rubbery linings and coatings, comprise a terminally reactive diolefin polymer such as dibromopoly-butadiene, a curative for the polymer, a rubbery thermoplastic polymer such as a styrene butadiene block copolymer, and a solvent.

3,755,232

PREVULCANIZATION OF RUBBERS BY HYDROGEN PEROXIDE AND AN ACTIVATOR

Bruce K. Rodaway, Erdington, Birmingham, and Kenneth O. Calvert, Sutton Coldfield, both of England, assignors to Dunlop Holdings Limited, London, England

Filed Sept. 8, 1970, Ser. No. 70,584
Claims priority, application Great Britain, Sept. 12, 1969, 45,017/69; Apr. 29, 1970, 20,499/70
Int. Cl. C08d *7/00, 13/28;* **C08f** *1/88, 27/00*
U.S. Cl. 260—29.7 AT **14 Claims**

A prevulcanized polymer latex is made by treating an unsaturated polymer in an aqueous medium with hydrogen peroxide and a hydrogen peroxide activator which does not encourage the decomposition of the hydrogen peroxide to produce molecular oxygen under the conditions of the treatment. The prevulcanized polymer latex may be used in latex applications such as in adhesives, coatings, carpet backings, dips, threads, tapes and foams, of which the following is a Specification.

3,755,233

COMPOSITION COMPRISING ETHYLENE/VINYL CHLORIDE/N-METHYLOL ACRYLAMIDE AND A MINERAL PIGMENT FOR COATING PAPER

William F. Fallwell, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 20, 1970, Ser. No. 56,685
Int. Cl. C08f *37/14, 45/06*
U.S. Cl. 260—29.6 TA **9 Claims**

Composition comprising an aqueous dispersion of ethylene/vinyl chloride/N-methylol acrylamide and a mineral pigment useful for coating cellulosic substrates such as paper and paperboard.

3,755,234

PROCESS FOR PREPARING GRAFT COPOLYMER EMULSIONS

Kiyoshi Chujo; Shinji Tokuhara; Kazunobu Tanaka; Zenjiro Honda, and Shoji Watanabe, all of Saitama, Japan, assignors to Diacel, Ltd., Higashi-ku, Osaka, Japan

Filed July 27, 1971, Ser. No. 166,567
Claims priority, application Japan, July 31, 1970, 45/67202
Int. Cl. C08g *25/00*
U.S. Cl. 260—29.6 WA **8 Claims**

Vinyl monomers are graft-copolymerized with the aid of a tetravalent cerium salt as a polymerization initiator in an aqueous polyvinyl alcohol solution. Aqueous emulsions of graft copolymers of high concentration are prepared, which emulsions have a high film-forming property and a smooth consistency, but are free of any lumps.

3,755,235

POLYTETRAFLUOROETHYLENE EMULSIONS HAVING IMPROVED PROPERTIES

Dario Sianesi, Milan; Giancarlo Bernardi, Canzo, and Gianfranco Veroli, San Donato Milanese, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Jan. 5, 1971, Ser. No. 104,122
Claims priority, application Italy, Jan. 9, 1970, 19183 A/70
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F **13 Claims**

Stabilized polytetrafluoroethylene emulsions particularly suitable for protective coating applications are produced by

adding, to emulsions obtained from conventional emulsion polymerization of tetrafluoroethylene, a perfluoroketoether compound. The resulting emulsions are much more resistant to coagulation than are untreated emulsions when subjected to agitation or contacted with ionic materials such as acids and salts. More desirable coatings than heretofore possible, that are less subject to yellow discoloration occurring in conventional coatings and capable of being cast at greater thickness (of up to about 40 microns) without carcking, are obtained therewith.

Concentrated polytetrafluoroethylene emulsions are produced by adding ionic material to the foregoing stabilized emulsions.

3,755,236

COPOLYMERS OF VINYLSULFONIC ACID SALTS AND ALLYLSULFONIC ACID SALTS

Joseph Emil Puskas, Yardville, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,858

Int. Cl. C08f *15/02, 37/00*

U.S. Cl. 260—29.65 Q **10 Claims**

New copolymers have been prepared from the salts of ethenesulfonic acid and the salts of 2-propene-1-sulfonic acid by solution polymerization methods such as batch or delay. The copolymers have been found useful as dispersants for the clays used in paper coating and in latex stabilization.

3,755,237

VINYL ACETATE-ALPHA OLEFIN COPOLYMER COMPOSITIONS

Philip K. Isaacs, Jerusalem, Israel, and Alexander C. Paton, Bedford, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 106,287, Jan. 13, 1971, which is a continuation-in-part of Ser. No. 560,784, June 27, 1966, abandoned. This application Mar. 15, 1971, Ser. No. 124,540

Int. Cl. C08f *29/10, 29/50, 45/02*

U.S. Cl. 260—29.6 TA **13 Claims**

Novel copolymer compositions containing a predominant amount of vinyl acetate copolymerized with about 1 to 20 weight percent of C_7 to C_{20} straight chain alpha olefin and about 0.1 to 30 weight percent of at least a third comonomer are particularly useful in coating compositions, e.g., paints and adhesives.

3,755,238

HIGH GLOSS AND LOW BLOCK COATING COMPOSITION CONTAINING PLASTICIZED VINYL RESIN LATEX AND FINELY DIVIDED POLYOLEFIN PARTICLES

Ronald E. Wilta, 7625 Hartman Rd., Rt. 2, Wadsworth, Ohio

Filed Dec. 28, 1970, Ser. No. 102,097

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 XA **6 Claims**

A latex-based coating composition having high gloss and improved block resistance comprising a plasticized vinyl resin latex containing fillers and dispersed therein microfine polyolefine particles. Though these compositions can be coated upon a wide variety of substrates, they are particularly valuable in the preparation of coated acoustical ceiling tiles to produce good gloss and reduce blocking. The invention also includes said acoustical ceiling tiles coated with said coating composition.

3,755,239

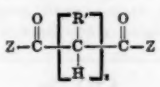
DISPERSANTS FOR DISSOLUTION OF ELASTOMERS IN SOLVENTS

Richard J. Sonnefeld; Carl A. Uraneck, and Edward J. Kosinsky, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 24, 1971, Ser. No. 146,457

U.S. Cl. 260—33.6 A **7 Claims**

A method of facilitating the dissolution of an elastomer in an organic solvent by employing as a dispersant a compound having the general formula



wherein x is an integer from 1 to 10, R′ is one of hydrogen and a substantially hydrocarbon radical containing at least 50 aliphatic carbon atoms, Z is selected from the group consisting of OH, OM and OR″, R″ being derived from a mono- or polyhydric alcohol, and M is a monovalent alkali metal or divalent alkaline earth metal.

3,755,240

THERMOSETTING PULVERULENT BINDER

Wilhelm Lucker, Homberg/Niederrhein, and Helmut Vietz, Kamp-Lintfort, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Dec. 14, 1970, Ser. No. 98,112

Claims priority, application Germany, Dec. 12, 1969, P 19 62 356.4

Int. Cl. C08g *51/28, 53/00*

U.S. Cl. 260—33.6 R **6 Claims**

Thermosetting pulverulent binders suitable for use in manufacturing foundry molds comprising (*a*) phenolformaldehyde novolak finely ground with hexamethylene-tetramine, (*b*) magnesium oxide and (*c*) mineral oil are prepared by spraying a pulverulent mixture of (*a*) and (*b*) maintained in a fluidized state with mineral oil.

3,755,241

POTTING COMPOUND AND METHOD OF POTTING

Thomas G. Brady, Oneonta, N.Y., assignor to The Bendix Corporation, Sidney, N.Y.

Continuation-in-part of Ser. No. 850,632, Aug. 15, 1969, abandoned. This application June 30, 1971, Ser. No. 158,606

Int. Cl. C08g *51/14, 51/28*

U.S. Cl. 260—33.6 UB **10 Claims**

A potting compound is used to embed delicate or coordinated instruments within a casing to protect them from shock or vibration which would destroy them or derange them. The essential ingredients of the potting compound are dihydroxypolybutadiene, an extender oil, a microfine polypropylene powder, and an organic diisocyanate. The resulting compound is presumed to have an oil-modified polyurethane structure as a matrix enclosing the polypropylene powder as an integrated, dispersed phase. The compound has high adhesion to practically everything used in potting, requires no interlayer, is flexible at −65° F. and is heat resistant for short periods at 260° F.

3,755,242

POLYCARBODIIMIDE PREPOLYMERS

Charles Reich, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 10, 1972, Ser. No. 242,838
Int. Cl. C08g *22/00*
U.S. Cl. 260—37 N 27 Claims

A new class of isocyanate-terminated solid, soluble, fusible, storable prepolymers suitable for producing high molecular weight polycarbodiimides; formed from polycarbodiimide-forming polyisocyanate monomers having a melting point below 200° C., said prepolymers comprising a mixture of liner chains of polycarbodiimides and said monomers, said mixture containing about 2 to 95 percent of the original isocyanate nitrogen in the form of polycarbodiimide. The prepolymer can be in admixture with a catalyst and solvent for said catalyst for further formation or polycarbodiimide.

3,755,243

DENSE GRAPHITE STRUCTURES

Roger C. Emanuelson, Glastonbury, and Warren Lee Luoma, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 789,780, Jan. 8, 1969, Pat. No. 3,634,569.
Filed Mar. 25, 1971, Ser. No. 127,979
Int. Cl. C08g *51/08*
U.S. Cl. 260—38 4 Claims

This disclosure describes a graphite composition and a fabrication procedure for producing coolant and/or support plates for acid fuel cells. The composition consists of a graphite powder sized principally in the 50 to 150 micron range with about seven percent of the graphite powder in the range below 50 microns. The process involves a controlled low-pressure heating step and an intermediate temperature full-pressure molding operation. Homogeneous graphite structures of high density with improved structural, thermal, and electrical properties can be provided in a variety of extremely intricate shapes by molding.

3,755,244

POLYOLEFIN PIGMENT DISPERSIONS

William J. Hart, Glens Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 818,435, April 22, 1969, abandoned. This application June 2, 1971, Ser. No. 149,365
Int. Cl. C08f *45/04, 45/08, 45/14*
U.S. Cl. 260—41 R 9 Claims

Non-dusting, granular pigment concentrates which are intimate dispersions of pigment in a low molecular weight polyolefin are described. The pigment dispersions are produced by milling pigment, low molecular weight polyolefin and water to form an aqueous slurry and then solvent granulating the pigment dispersion in the slurry in the presence of a surfactant.

3,755,245

POLYPROPYLENE COMPOSITIONS CONTAINING GLASS REINFORCEMENT

Walter E. Gloor, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 6, 1971, Ser. No. 169,836
Int. Cl. C08f *45/16*
U.S. Cl. 260—41 AG 3 Claims

Compositions are taught comprised of polypropylene and silane treated glass fibers wherein the glass fibers are coupled to the polymer by the use of an organic peroxide and a high molecular weight chlorinated organic compound.

3,755,246

PROCESS FOR MANUFACTURING POLYVINYL FLUORIDE WITH IMPROVED THERMOSTABILITY

Werner Trautvetter, Hohlsteinstrasse 50, Spich, and Gregor Weisgerber, Kantering 51, Ittenbach, both of Germany

Continuation of Ser. No. 810,387, March 25, 1969, abandoned. This application May 24, 1971, Ser. No. 146,495
Claims priority, application Germany, Mar. 26, 1968, P 17 70 054.8; July 24, 1968, P 17 70 962.5
Int. Cl. C08d *11/04*; C08f *3/22*
U.S. Cl. 260—45.7 R 15 Claims

Improvements in polyvinyl fluoride obtained by adding iodine or an iodine compound to the vinyl fluoride monomer prior to or during polymerization thereof and for adding iodine or an iodine compound to polyvinyl fluoride. The polymerization is preferably in the aqueous phase above the critical temperature in the presence of azo-bis-isobutyramidine hydrochloride and N-alkyl substituted such compounds as catalyst. The iodine content of the polymer, calculated as iodine, is preferably 0.001 to 1 weight percent based upon vinyl fluoride content.

3,755,247

ORGANO PHOSPHITE AND NICKEL COMPLEX UV LIGHT STABILIZER SYSTEM

Ronald D. Mathis, Taylors, and James S. Dix, Greenville, both of S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 10, 1972, Ser. No. 216,741
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 N 10 Claims

The effectiveness of nickel amine complexes of bis-phenol sulfides as ultraviolet light stabilizers for polymers is enhanced by the further presence of a small amount of a phosphite extended t-alkylated bisphenol A.

3,755,248

POLYPIVALOLACTONE COMPOSITION WITH IMPROVED THERMOSTABILITY

Yukio Shimosaka; Sumimichi Ueda, and Shigeru Nakajima, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed July 20, 1972, Ser. No. 273,458
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.8 N 10 Claims

A polypivalolactone composition is produced by mixing a polypivalolactone with one or more indole derivatives having a boiling point not less than 260°C. The composition has an improved stability against disintegration or decomposition of the polymer molecules at elevated temperatures.

3,755,249

PERMANENTLY ANTISTATIC AND MELT-SPINNABLE POLYAMIDE COMPOSITIONS

Yutaka Fujita; Takao Ashida; Keiichi Moriyama, and Eiichi Hashimoto, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 29, 1971, Ser. No. 203,030
Claims priority, application Japan, Nov. 27, 1970, 45/104615; June 2, 1971, 46/38467; June 4, 1971, 46/39207; June 16, 1971, 46/43175
Int. Cl. C08g *51/58, 51/00*
U.S. Cl. 260—45.75 R 10 Claims

Polyamide compositions having excellent melt-spinnability and durable antistatic property, while fully retaining the favorable properties inherent in polyamides, which comprises

a polyamide containing as an antistatic agent one which comprises (A) a polyalkylene oxide-added secondary alkylamine and (B) a polyalkylene oxide-added tertiary alkylamine, the secondary alkylamine (A) occupying 5 – 50 percent by weight based on the sum weight the above compounds (A) and (B), and the antistatic agent being incorporated in an amount of 1 – 15 percent by weight based on the weight of the polyamide.

3,755,250

PHENOLIC PHOSPHATE AND PHOSPHITE ANTIOXIDANTS

John C. Wollensak, Bloomfield Hills, and Edward F. Zaweski, Pleasant Ridge, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 780,266, Nov. 29, 1968, Pat. No. 3,683,054, which is a continuation-in-part of Ser. No. 746,760, July 23, 1968, abandoned. This application Apr. 20, 1972, Ser. No. 245,755

Int. Cl. C08f *45/58*; C08g *51/58*

U.S. Cl. 260—45.85 S **10 Claims**

Organic material, especially polypropylene, is stabilized by the addition of mono- or di- (dihydrocarbyl-hydroxyphenyl) alkyl phosphates, phosphites, thiophosphates or thiophosphites, such as 3,5-di-tert-butyl-4-hydroxyphenyl di-n-octadecyl phosphate. Effectiveness is synergistically improved by inclusion of a dialkyl thiodialkanoate such as dilaurylthiodipropionate.

3,755,251

MANUFACTURE OF POLYETHYLENE TEREPHTHALATE POLYESTER

Joseph Donald Decaprio, Hopewell; Brian Armstead Dementi, Richmond, and Stanley David Lazarus, Petersburgh, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,085

Int. Cl. C08g *17/08*, *51/58*

U.S. Cl. 260—45.95 R **9 Claims**

The manufacture of linear high-molecular weight film and fiber-forming polyester wherein the reaction of polycarboxylic acid with a polyol takes place in the presence of a catalytic amount of a halogenated phenolic compound to improve processing and end product characteristics.

3,755,252

CROSS-LINKED ARTICLES AND COATINGS OF VINYL CHLORIDE POLYMERS AND PROCESS FOR THEIR MANUFACTURE

Robert Buning, Troisdorf-Sieglar, and Siegmund Frick, Troisdorf-Oberlar, both of Germany, assignors to Dynamit Novel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 13, 1971, Ser. No. 180,149

Claims priority, application Germany, Sept. 19, 1970, P 20 46 293.5

Int. Cl. C08f *1 1/04*

U.S. Cl. 260—46.5 R **9 Claims**

A process for cross-linking a vinyl chloride polymer which comprises mixing a non-cross-linked vinyl chloride-silane copolymer with an acid catalyst and heating, if necessary. The compositions produced by this process are useful as coatings, fibers or sheets.

3,755,253

CATALIZATION OF DIAMINODIPHENYLSULFONE CURE OF POLYEPOXIDES WITH AN IMIDAZOLE COMPOUND OR A SALT THEREOF

Kenneth K. Rice, Walnut Creek, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 14,658, Feb. 26, 1970, abandoned. This application Sept. 24, 1971, Ser. No. 183,654

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **7 Claims**

New adhesive compositions having substantially shortened cure cycles comprise the reaction product of (1) a polyepoxide (2) an aromatic amine such as diaminodiphenylsulfone, and (3) a catalytic amount of an imidazole compound or a salt thereof.

3,755,254

PROCESS FOR THE PREPARATION OF POLYAMIDOXIMES AND POLY(BISBENZIMIDAZOBENZOPHENANTHROLINE) (BBB) TYPE POLYMERS DERIVED THEREFROM

Carl N. Zellner, New Hope, Pa., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,750

Int. Cl. C08g *20/32*, *33/02*

U.S. Cl. 260—47 CP **23 Claims**

Process for the preparation of polymers which comprises reacting at temperatures of from about 0° to about 250°C. an aromatic diamine with a bis(hydroxamoyl halide)-bis(carboxylic acid) or a derivative thereof to form a polyamidoxime, which may then be subjected to ring closing conditions to form poly(bisbenzimidazobenzophenanthroline) (BBB) type polymers. Formation of the polyamidoxime is preferably conducted in the presence of a solvent, which may or may not also function as an acid-acceptor; if not, then preferably also in the presence of an acid-acceptor. The preferred acid-acceptors are those which are insoluble in the reaction mixture--most preferably melamine. The ring closure may be conducted in the presence of a catalyst at temperatures of from about 0° to about 250°C. or by reaction with an aromatic sulfonyl halide at temperatures of from about 0° to about 90°C. Reactive amine or hydroxamoyl halide terminal groups of the polyamidoximes or BBB type polymers may be reacted with other compounds or polymers which contain groups reactive therewithin order to further extend the polymer chains. In a preferred prior step, aromatic bis(hydroxamoyl halide)-bis(carboxylic acid) reactants are made by the reaction of dialkyl-dicarboxy aromatic precursors with, e.g., nitrosyl halide. Novel polyamidoximes.

3,755,255

POLYAMIDES HAVING IMPROVED DYEABILITY PREPARED FROM AROMATIC CARBOXYLIC DISULFONATED COMPOUNDS

John Ewart Lodge, c/o ICI Fibres Limited, Pontypool, England

Continuation-in-part of Ser. No. 764,322, Oct. 1, 1968, abandoned. This application June 9, 1971, Ser. No. 151,554

Int. Cl. C08g *20/20*

U.S. Cl. 260—49 **5 Claims**

Basic dye affinity for polyamides is improved by interpolymerizing defined aromatic carboxylic disulphonated compounds with conventional polyamide monomer.

3,755,256

AROMATIC POLYSULPHONES CONTAINING PHOSPHORUS COMPOUNDS TO INCREASE MELT STABILITY

Gordon Maxwell Beverly, Welwyn Carden City, England, assignor to Imperial Chemical Industries Limited, Millbank, London, England

Filed Feb. 25, 1972, Ser. No. 229,507

Claims priority, application Great Britain, Mar. 10, 1971, 6,458/71; Jan. 18, 1972, 2,347/72

Int. Cl. C08g *23/00*

U.S. Cl. 260—49 6 Claims

A thermoplastic composition comprising (a) 96 to 99.9 percent by weight of at least one aromatic polysulphone and (b) 4 to 0.01 percent by weight of at least one phosphorus compound having the formula Y_3PQ in which Y is a univalent organic radical which may be the same or different and Q is oxygen or sulphur.

3,755,257

BAKING ENAMEL VEHICLE COMPRISING THE REACTION PRODUCT OF PHENOL, FORMALDEHYDE AND AN OXAZOLINE

Jerry Hoyt Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.

Division of Ser. No. 36,680, May 12, 1970, Pat. No. 3,654,229. This application Sept. 30, 1971, Ser. No. 185,430

Int. Cl. C08g *5/06, 9/24*

U.S. Cl. 260—57 R 5 Claims

An improved vehicle for the formulation of baking enamels obtained by reacting an oxazoline with a member selected from the group consisting of formaldehyde, and phenol.

3,755,258

RAPID CURING RESIN COMPOSITIONS COMPRISING A PHENOL-ALDEHYDE CONDENSATION POLYMER MODIFIED WITH AN ACYL HYDRAZIDE

George T. Tiedeman, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 25, 1971, Ser. No. 146,784

Int. Cl. C08g *5/18, 9/04*

U.S. Cl. 260—59 46 Claims

Described herein are resin products having particular utility as rapid curing adhesives for wood and other materials, and processes fo making the resin compositions. These products are made by reacting an aldehyde condensation polymer containing reactive alkylol groups, such as a phenol-formaldehyde condensation polymer, with an acyl hydrazide. When the resulting acyl hydrazide-modified polymers are blended with an appropriate curing agent, such as an aldehyde, the compositions cure very rapidly at ambient temperatures. When pieces of wood or other materials are spread with the preferred resin compositions of this invention and brought into contact with another wood surface the bond strength develops within minutes. The durability, strength and flexibility of the adhesives of this invention under adverse weathering conditions are excellent.

3,755,259

POLYMERIC LATICES AND SODIUM ALUMINATE

Donald R. Anderson, Oswego, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Jan. 31, 1972, Ser. No. 222,340

Int. Cl. C08f *37/00*

U.S. Cl. 260—29.6 M 4 Claims

A coating composition comprising from 1 to 99 percent by weight of sodium aluminate and from 1 to 99 percent by weight of a water-in-oil emulsion, said emulsion containing dispersed therein from 1 to 35 percent by weight of a finely divided water-soluble anionic vinyl addition polymer.

3,755,260

OZIDOFORMATE-ISOCYANATE COMPOUNDS AND THEIR USES

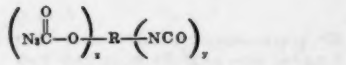
Harold M. Spurlin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 860,034, Sept. 22, 1969, Pat. No. 3,676,466. This application Aug. 26, 1971, Ser. No. 175,411

Int. Cl. C08f *27/10*; 156 *133, 314*

U.S. Cl. 260—75 TN 6 Claims

Disclosed are azidoformate-isocyanate compounds of the formula



where R is a polyvalent organic radical and *x* and *y* are integers from 1 to 100. The use of said azidoformate-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has been modified with an azidoformate-isocyanate compound.

3,755,261

CURING OF AMINE CURABLE POLYMERS DIAMINES WITH COMPLEXES OF SELECTED AND ALKALI METAL SALTS

Norman Martin VanGulick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1972, Ser. No. 249,714

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AM 16 Claims

Amine curable polymers are cured effectively by the use of complexes of 4,4′-methylene dianiline and/or racemic 2,3-di-(4-aminophenyl) butane and selected alkali metal salts including sodium chloride.

3,755,262

TRANSPARENT HIGH-IMPACT POLYURETHANE PRODUCTS

Edwin C. Slagel, Phoenix, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jan. 15, 1971, Ser. No. 106,877

Int. Cl. C08g *22/06, 17/13*

U.S. Cl. 260—77.5 AM 3 Claims

A polyurethane and method of making said polyurethane which is characterized by being transparent and having good heat distortion and resistance to haze and impact.

3,755,263

DISULFIMIDE ACID-MODIFIED HIGH MOLECULAR WEIGHT POLYAMIDES

Ferdinand Bodesheim; Gerhard Dieter Wolf, and Gunther Nischk, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

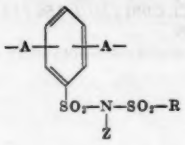
Filed Apr. 9, 1971, Ser. No. 132,871

Claims priority, application Germany, Apr. 15, 1970, P 20 17 968.4

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 11 Claims

High molecular weight aliphatic polyamides containing at least 50 mequiv. per kg of polyamide of units of the formula



The polyamides are useful for the production of filaments and films and show great affinity for basic dyes.

3,755,264

MALEIC ANHYDRIDE COPOLYMERS AND METHOD OF MAKING

Anthony J. Testa, Westwood, Mass., assignor to Amicon Corporation, Lexington, Mass.

Filed July 30, 1971, Ser. No. 167,823

Int. Cl. C08f *15/14*

U.S. Cl. 260—78.5 R 9 Claims

Copolymer of 99 to 85 mol percent of maleic anhydride with from 1 to 15 mol percent of acrylic acid, vinyl acetate, styrene, or mixtures thereof, and hydrolyzed analogous copolymers of maleic acid or maleic salts are highly effective chelating agents. They are made by slowly combining a solution containing the acrylic acid, vinyl acetate, or styrene and a large amount of free radical initiator with a solution containing the maleic anhydride.

3,755,265

HIGHLY FLUORINATED POLYURETHANES

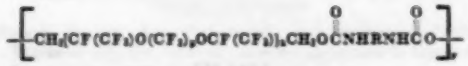
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an Invention of; Eugene C. Stump, Gainesville, Fla., and Stephen Eugene Rochow, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 770,417, Oct. 24, 1968, abandoned. This application Apr. 4, 1972, Ser. No. 241,061

Int. Cl. C08g *22/14*

U.S. Cl. 260—77.5 AP 7 Claims

Polyurethanes having the repeating unit:



where

n is an integer of 1 to 12,

p is an integer of 2 to 23,

y is an integer of 1 to 1000, and

R is any radical suitable to link isocyanate groups and is preferably selected from the group consisting of alkylene and halogen substituted alkylene radicals of four to 12 C atoms, substituted and unsubstituted phenylene groups of up to 20 C atoms.

3,755,266

LACTAM POLYMERIZATION WITH AMIDE INITIATORS

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Sommerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 183,700, Sept. 24, 1971, which is a continuation-in-part of Ser. No. 26,128, April 6, 1970, abandoned. This application Nov. 11, 1971, Ser. No. 197,933

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L 8 Claims

Certain amide compounds based on aromatic amines are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide polymerization systems which may be utilized in a variety of molding operations.

3,755,267

LACTAM POLYMERIZATION WITH AMIDE INITIATORS

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 183,700, Sept. 24, 1971, which is a continuation-in-part of Ser. No. 26,128, April 6, 1970, abandoned. This application Nov. 11, 1971, Ser. No. 197,934

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L 7 Claims

Certain amide compounds based on aromatic amines are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide polymerization systems which may be utilized in a variety of molding operations.

3,755,268

THIOLACTONE POLYMERIZATION AND CATALYSTS

Peter E. Fritze, West Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,598

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 18 Claims

Thiolactones can be polymerized using as a catalyst, manganous or cadmium ions, in conjunction with an initiator such as water or an organic compound containing a primary hydroxyl or sulfhydryl group. They can also be copolymerized with lactones using the same catalyst/initiator system.

3,755,269

PRODUCTION OF MERCAPTAN-TERMINATED POLYMERS

Carl A. Uraneck, and Richard L. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 30, 1971, Ser. No. 185,343

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 NV 10 Claims

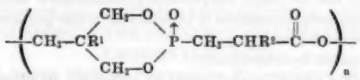
Polymers having mercaptan terminal groups are prepared by reacting a polymer-metal reactant with an aromatic thioketone to produce a polymer having improved vulcanizate properties.

3,755,270
THERMALLY STABLE POLYPHOSPHONATES AS FLAME RETARDANTS

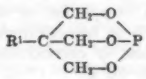
James S. Clovis, and Francis R. Sullivan, both of Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 3, 1971, Ser. No. 139,948
Int. Cl. C08f 3/42; C08g 17/133
U.S. Cl. 260—80 P 3 Claims

A thermally stable flame-resistant phosphonate polymer of the structure



wherein R^1 is methyl or ethyl, R^2 is hydrogen or methyl and n is 3 to 100, is formed by the reaction of acrylic or methacrylic acid with an alkyl bicyclic phosphite of the structure



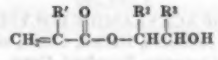
wherein R^1 is as above. The phosphonate polymer is useful in forming flame-resistant acrylic compositions such as molding powders and sheets from mixtures comprising the polymer and methyl methacrylate.

3,755,271
COMPATIBLE AND REACTIVE VINYL COPOLYMER RESN

Donald R. Montgomery, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,569
Int. Cl. C08f 15/40
U.S. Cl. 260—80.75 1 Claim

A terpolymer of vinyl chloride, vinyl acetate and an acrylic ester having the formula:



wherein R', R^2 and R^3 may be hydrogen and methyl, in which the vinyl chloride mer content is about 50 to about 69 weight percent, based on the terpolymer weight, the acrylic ester mer content is about 2 weight percent to about 18 weight percent, based on the terpolymer weight, and the vinyl acetate mer content is at least 25 weight percent, based on the terpolymer weight, and said terpolymer has an inherent viscosity of about 0.15 to about 0.5, determined at 30° C using 0.2 grams of the terpolymer in a deciliter of cyclohexanone. These terpolymer resins can be employed alone or in admixture with other resins (such as nitrocellulose and polyurethanes) to make useful coatings.

3,755,272
COPOLYMERIZATION OF C_4-C_{30} α-OLEFINS AND ACRYLIC ACID OR METHACRYLIC ACID

Werner Josef Blank, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

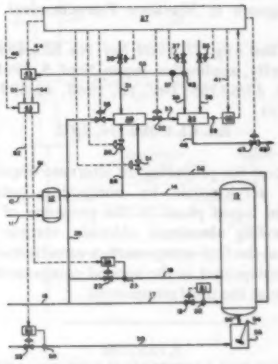
Filed Apr. 1, 1971, Ser. No. 130,529
Int. Cl. C08f 1/60
U.S. Cl. 260—80.78 8 Claims

There is provided an improved process for effecting the copolymerization of α-olefins and acrylic acid or methacrylic acid by adding to (A) a non-iso α-olefin containing from 8 to 30 carbon atoms, or more, at temperatures ranging from about 120° C. to about 200° C., (B) acrylic acid or methacrylic acid monomer in the presence of a free radical initiator and in the absence of both an hydroxy-containing compound and a Friedel Crafts catalyst, the latter monomer being added at a rate whereby not more than 20 percent of monomer other than the α-olefin, based on the α-olefin charged, remains as monomer in admixture during addition of said monomer.

3,755,273
AMPEROMETRIC ANALYSIS METHOD AND APPARATUS FOR CONTROL OF CATALYTIC REACTIONS

Carl A. Uraneck, and Richard L. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 6, 1971, Ser. No. 131,649
Int. Cl. C08d 3/08, 5/02; C08f 27/06
U.S. Cl. 260—83.7 7 Claims



A process is provided for the automatic determination of reactive metal sites in a reaction product and for the automatic introduction of the stoichiometric quantity of coupling or terminating agent required to react with the metal sites in response to the said determination. The process, in another aspect, determines the quantity of catalyst poisons in a feed stream and, in response thereto, introduces the quantity of catalyst required to react with the feed poisons.

3,755,274
CATALYST AND PROCESS FOR THE PREPARATION OF POLYETHYLENES HAVING A NARROW MOLECULAR-WEIGHT DISTRIBUTION

Gottfried Piekarski; Anton Hundmeyer; Dieter Kippe, and Sigmund Maier, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed May 16, 1972, Ser. No. 253,887
Claims priority, application Germany, May 26, 1971, P 21 26 250.0
Int. Cl. C08f 1/44, 3/06
U.S. Cl. 260—88.2 R 12 Claims

A catalyst for the production of polyethylene and modified polyethylene having a narrow molecular weight distribution comprising the reaction product of (A) a reaction product of one mol of trialkyl aluminum having from two to eight carbon atoms in each of the alkyls with from one to two mols of a polysiloxane having a viscosity of from 5 to 100 cSt (25°C) and monomer units having the formula

where R is alkyl having one to six carbon atoms, cycloalkyl or aryl and (B) a compound of the formulae

$$TiX_{4-n}(OR')_n,\ VOX_{3-n}(OR')_n \text{ and } VX_{4-n}(OR')_n$$

where X is a halogen, R' is alkyl having one to eight carbon atoms or cycloalkyl and n has a value between 0.1 and 2, or mixtures of said compounds, as well as a method of producing polyethylene and modified polyethylene having a narrow molecular weight distribution utilizing said reaction product catalyst.

3,755,275

PROCESS FOR PREPARING AN ALTERNATE COPOLYMER OF BUTADIENE AND ACRYLONITRILE

Akihiro Kawasaki; Masanobu Taniguchi; Tsuneto Nishiyama, all of Ichihara-shi, and Hiroaki Ueda, Chiba-shi, all of Japan, assignors to Maruzen Petrochemical Co., Tokyo, Japan

Filed Aug. 27, 1969, Ser. No. 853,499

Claims priority, application Japan, Sept. 5, 1968, 43/63383; Sept. 5, 1968, 43/63385; Dec. 10, 1968, 43/89975; Dec. 26, 1968, 43/94935

Int. Cl. C08d *1/4, 3/02*

U.S. Cl. 260—82.5 **10 Claims**

A new process for preparing an alternate copolymer of butadiene and acrylonitrile by contacting butadiene with acrylonitrile in liquid phase in the presence of the catalyst system comprising aluminum chloride, stannic chloride or zinc chloride as the first component, a vanadium compound or a chromium compound as the second component, and an organic peroxide as the third component.

3,755,276

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Richard C. Oldack, North Canton, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 716,346, March 27, 1968, abandoned. This application Feb. 17, 1971, Ser. No. 116,249

Int. Cl. C08f *27/00, 19/06, 5/00*

U.S. Cl. 260—85.1 **21 Claims**

The process described herein involves a method of converting relatively low molecular weight polymers by postreaction with a mixture of divinyl benzene and a haloalkane having no more than one halogen atom on any carbon atom, in the presence of an alkali metal catalyst, such as butyl lithium to give higher molecular weight polymers having improved cold flow resistance, processibility, green strength, etc. The improvements are much greater than can be effected by postreaction with either divinyl benzene or the haloalkane individually, or by having divinyl benzene present during the copolymerization. The haloalkanes include chloro, bromo, and iodo compounds and can have 1–4 or even more halogen atoms per molecule provided there are no more than one halogen atom on any carbon atom.

3,755,277

ORIENTED HOLLOW ARTICLES FROM STYRENE-ACRYLONITRILE POLYMER

Edward C. Toups, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 14, 1971, Ser. No. 106,588

Int. Cl. C08f *15/04, 15/22*

U.S. Cl. 260—85.5 R **8 Claims**

Hollow articles such as bottles are produced from styrene-acrylonitrile polymers under orientation conditions to give a high strength product.

3,755,278

PROCESS FOR THE POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS

Luigi Patron, Venezia, and Luciano Console, Mestre, both of Italy, assignors to Chatillon Societe Anonima Italiana per de Fibre Tessili Artificiali S.p.A., Milan, Italy

Filed Aug. 6, 1971, Ser. No. 169,806

Claims priority, application Italy, Aug. 10, 1970, 28465 A/70

Int. Cl. C08f *3/30, 3/76, 7/02*

U.S. Cl. 260—88.7 R **15 Claims**

A process is disclosed for the polymerization in bulk or in solution of one or more ethylenically unsaturated monomers wherein the polymerization is conducted in the presence of a catalytic system consisting of:

a. an organic hydroperoxide;

b. an alkyl or cyclo-alkyl ester of sulphuric or phosphoric acid, wherein the alkyl or cycloalkyl group contains from 1 to 12 carbon atoms; and

c. a nucleophilic compound such as an alcoholate of an alkali or alkaline-earth metal, wherein the alkyl radical may have a linear or branched chain having from 1 to 6 carbon atoms, or a hydroxide of an alkali metal fed to the reaction medium in an alcoholic solution or alcoholic solutions of ammonia, of pyridine, or of other nitrogen containing bases such as tetraalkyl-ammonium hydroxide. The polymerization is carried out at a temperature between +50° and −50° C.

3,755,279

COPOLYMERIZATION OF ALPHA OLEFINS WITH STERICALLY HINDERED ALKENYL AMINES USING ZIEGLER CATALYSTS

Arthur W. Langer, Jr., Watchung, N.J., and Raymond R. Haynes, Baytown, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed June 25, 1965, Ser. No. 467,109

Int. Cl. C08f *15/00, 45/66*

U.S. Cl. 260—88.1 PN **5 Claims**

Alpha-olefins are copolymerized with a sterically hindered alkenyl amine in the presence of an organo-metal-transition metal catalyst (Ziegler-type catalyst). Copolymers are produced having 0.07 to 0.5 weight percent nitrogen in the copolymer.

3,755,280

DRYING OF ACRYLAMIDE POLYMER GELS

Kenneth Worden Saunders, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 5, 1971, Ser. No. 121,583

Int. Cl. C08f *3/90, 15/02*

U.S. Cl. 260—89.7 S **4 Claims**

The detoxification of monomeric acrylamide in aqueous polyacrylamide gels containing redox catalyst residuum is accomplished by the addition of less than 2/3 mol of a water-soluble non-toxic sulfite per mol of monomeric acrylamide present. The acrylamide is detoxified by conversion to polymer form.

3,755,281

CONTINUOUS POLYMERISATION PROCESS

Brian James Busby, Victoria, and David Alexander Hughes, New South Wales, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed May 17, 1971, Ser. No. 143,891

Claims priority, application Australia, June 8, 1970, 145970; Dec. 30, 1970, 361970

Int. Cl. C08f *3/22*

U.S. Cl. 260—92.8 W **1 Claim**

A process of manufacturing particles which process comprises the following steps in combination

a. feeding into a closed reactor a nutrient, a recycle of particles from step (c) and optionally adding seed material;
b. allowing the recycled particles to grow into larger particles and separating the resultant particles into sized fractions; and
c. recycling particles of less than a certain predetermined size to step (a) and removing particles larger than a certain predetermined size as product.

Apparatus wherein this process may be carried out is also described.

3,755,282

SUSPENSION POLYMERIZATION OF VINYL AROMATIC MONOMERS IN THE PRESENCE OF UNSATURATED CARBOXYLIC ACID

Harold Austin Wright, Murrysville, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.

Filed June 29, 1971, Ser. No. 157,848
Int. Cl. C08f *1/11, 7/04*
U.S. Cl. 260—93.5 W **4 Claims**

The production of polymer beads by a suspension polymerization process in which a vinyl aromatic monomer having a free-radical generating catalyst dissolved therein is suspended in an aqueous medium with the aid of from 0.2 to 1.0 per cent by weight, based on monomer, of a finely divided phosphate suspending agent and heated to cause the monomer to polymerize into polymer beads is improved by the addition to the suspension of at least about 0.0001 per cent by weight based on monomer of an α,β-ethylenically unsaturated carboxylic acid as sole extender. The process of the invention is especially applicable in the preparation of large polymer beads.

3,755,283

NOVEL POLYMERS AND METHOD OF PREPARING SAME

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Stanley M. Hirshfield, New City, N.Y.

Filed May 19, 1971, Ser. No. 145,027
Int. Cl. C08f *1/74, 1/76, 3/16*
U.S. Cl. 260—93.5 S **6 Claims**

Polymers are prepared with terminal functional groups by reacting a compound selected from the group consisting of lithium p-lithiophenoxide and tetrabutylammonium p-lithiophenoxide as an initiator with material such as butadiene. The resulting functionally terminated new polymers are then capable of reacting with coupling agents to form star polymers.

3,755,284

PROCESS FOR POLYMERIZATION OF CONJUGATED DIENE

Takeshi Yamawaki; Tetsumi Suzuki, and Seiichi Hino, all of Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Aug. 3, 1971, Ser. No. 168,767
Claims priority, application Japan, Aug. 20, 1970, 45/73088
Int. Cl. C08d *3/04, 3/08, 3/12*
U.S. Cl. 260—94.3 **11 Claims**

A conjugated diene is polymerized in the presence of a two-component catalyst wherein the first component has the general formula:

$$M_l(M'F_n)_m \cdot xL$$

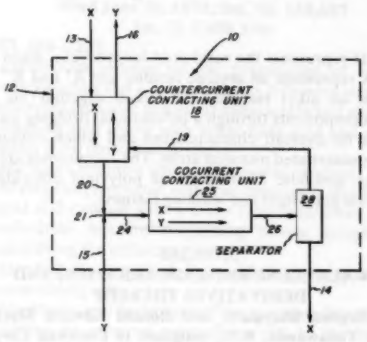
wherein M represents Co, Ni or Fe; M′ represents an element of Groups III–V of Series 3–7 of Mendeleeff's Periodic Table; and L represents a ligand having an active hydrogen atom; l and m are respectively integers of from 1–3; n is an integer of from 5–6; x is an integer of from 0–6; and the valence of M multiplied by 1 equals the valence of $M'F_n$ multiplied by m; and the second component is an organometallic compound of a Group II–III metal of Mendeleeff's Periodic Table.

3,755,285

MASS TRANSFER PROCESS

Carlo Piazza, deceased, late of Naperville, Ill. (by Judith B. Piazza, executrix), assignor to Standard Oil Company, Chicago, Ill.

Filed Oct. 1, 1971, Ser. No. 185,754
Int. Cl. C08f *1/88*
U.S. Cl. 260—94.9 F **15 Claims**



Mass transfer operations between two or more materials which are contacted within a system made up of a combination of selectively arranged sub-contacting units which are so combined as to provide for countercurrent phase contacting while having some cocurrent phase contacting within the combination.

3,755,286

GLY₃-ACHTH-ACTIVE PEPTIDES

Bernhard Riniker, Frenkendorf, and Werner Rittel, Basel, both of Switzerland, assignors to Ciba Corporation, Summit, N.J.

Continuation-in-part of Ser. No. 781,952, Dec. 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 529,259, Feb. 23, 1966, abandoned. This application May 5, 1970, Ser. No. 34,865
Claims priority, application Switzerland, Feb. 26, 1965, 2676/65
Int. Cl. C07c *103/52*; C07g *7/00*
U.S. Cl. 260—112.5 **8 Claims**

Peptides whose aminoacid sequence differs from that of the ACTH-active peptides containing the first three aminoacids of ACTH in that of the serine residues in 1- and 3-position at least that in 3-position is replaced by glycine. Thesc peptides have a stronger and/or longer lasting ACTH-activity than the corresponding peptides containing the natural first three aminoacids.

3,755,287

HETEROCYCLIC DISAZO DYESTUFFS CONTAINING A BRIDGING GROUP AND AT LEAST ONE QUATERNARY AMMONIUM GROUP

Gert Hegar, Schoenenbuch; Hans-Joerg Angliker, Riehen, and Richard Peter, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

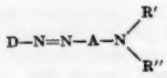
Continuation-in-part of Ser. No. 730,943, May 21, 1968, Pat. No. 3,635,940. This application May 19, 1971, Ser. No. 145,005

Claims priority, application Switzerland, May 29, 1967, 7532/67

Int. Cl. C09b *33/06*; D06p *1/02*

U.S. Cl. 260—155 7 Claims

Disazo compounds in which two monoazo dyestuff molecules of the general formula



in which D represents the residue of heterocyclic diazo component, A represents an arylene residue and R′ and R″ each represents an alkyl residue, are linked together via their coupling components through a bifunctional bridging group Z which has no dyestuff characteristics and which contains at least one quaternated nitrogen atom. The compounds are used for dyeing synthetic fibers such as polyvinyl chloride and demonstrate good light and washing fastness.

3,755,288

4,4-ALKYLENE BIS(SEMICARBAZIDE) AND DERIVATIVES THEREOF

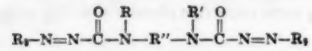
Chester Stephen Sheppard, and Ronald Edward MacLeay, both of Tonawanda, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 556,263, June 9, 1966, Pat. No. 3,585,200. This application June 22, 1970, Ser. No. 59,807

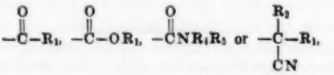
Int. Cl. C07c *107/02*

U.S. Cl. 260—174 5 Claims

Disazo compounds of the formula:



where R^9 is



such as N,N′-ethylene bis(2-cyano-2-propylazoformamide), which are useful as polymerization initiators, curing agents and the like.

3,755,289

2-(PHENYLAZO)-2,4-DIMETHYL AND 2-(PHENYLAZO)-2,4-DIMETHYL-4-ALKOXY VALERONITRILES

Joji Nagaoka, Tokyo; Kazuhiko Yamashita, Wako; Shin-Ichi Kitashima, and Kenichiro Fukuma, both of Tokyo, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo-ken and Wako Pure Chemical Industries, Ltd., Osaka, Japan

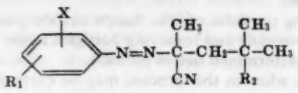
Filed Mar. 18, 1971, Ser. No. 125,489

Claims priority, application Japan, Mar. 25, 1970, 45/24393; May 15, 1970, 45/40928

Int. Cl. C07c *107/00*

U.S. Cl. 260—192 23 Claims

Photosensitizers useful as photo-polymerization catalysts are 2-(phenylazo)-2,4-dimethyl and 2-(phenylazo)-2,4-dimethyl-4-alkoxy valeronitriles represented by the following general formula:



wherein X is a hydrogen atom or a halogen atom; R_1 represents a hydrogen atom, a halogen atom or an alkyl group having one to eight carbon atoms; and R_2 represents a hydrogen atom or an alkoxy group with one to four carbon atoms.

3,755,290

WATER-SOLUBLE FIBER-REACTIVE SULPHOPHANYLAZO-NAPHTHYL DYESTUFFS CONTAINING AN ALPHA, BETA-DICHLORO- OR DIBROMPROPIONYLAMINO GROUP

Rene De Montmollin, Riehen, and Henri Riat, Arlesheim, both of Switzerland, assignors to Ciba-Geigy A.G., Basel, Switzerland

Continuation-in-part of Ser. No. 753,829, July 22, 1968, abandoned, which is a continuation of Ser. No. 608,710, Nov. 1, 1966, abandoned, which is a division of Ser. No. 305,539, Aug. 29, 1963, abandoned, which is a continuation-in-part of Ser. No. 731,097, April 28, 1958, abandoned. This application Nov. 12, 1969, Ser. No. 876,069

Claims priority, application Switzerland, May 7, 1957, 45789/57

Int. Cl. C09b *62/00*, *62/04*; D06p *3/66*

U.S. Cl. 260—196 18 Claims

Fibre-reactive sulphophenylazonapthylmonoazo dyestuffs containing an α,β-di-chloro- or dibromopropionylamino group. Yield on cotton brilliant dyeings of excellent general fastness-properties especially good fastness to light and excellant fastness to washing.

3,755,291

PROCESS FOR IMPROVING THE DRY STATE TINCTORIAL STRENGTH OF A WATER SOLUBLE AZO DYE

Walter R. Demler, Hamburg, and Paul G. Christ, Williamsville, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 598,164, Dec. 1, 1966, abandoned. This application Oct. 15, 1969, Ser. No. 870,763

Int. Cl. C09b *67/00*

U.S. Cl. 260—200 7 Claims

A process of preparing water-soluble azo dyestuffs having improved tinctorial strength in the dry state which comprises gradually growing crystals of the dye from a concentrated aqueous inorganic salt solution to form a crystalline mass of the dye, wherein the dye crystals have an average length greater than 40 microns and thereafter separating and drying the crystallized dye.

3,755,292

CYANOETHYL ETHER OF GALACTOMANNAN GUM

Robert Nordgren, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Dec. 23, 1969, Ser. No. 887,745

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R 10 Claims

A cyanoethyl ether of a galactomannan gum having a degree of substitution of greater than 1.9 and process of preparing the same at reflux temperatures with the periodic addition of water to the reactants. The product is used in explosives and can be used to thicken some organic solvents.

3,755,293

THE ANTIBIOTIC MINIMYCIN

Shiro Shirato; Junsaku Nagatsu; Mitsuo Shibuya, all of Tokyo, and Yoko Kusakabe, Tokorozawa, all of Japan, assignors to Kaken Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,782
Claims priority, application Japan, Sept. 5, 1969, 44/69949
Int. Cl. C07c *69/20*
U.S. Cl. 260—209 R 1 Claim

A novel antibiotic Minimycin characterized by a needle or pillar-like crystal form which is soluble in water and lower alcohols, but which is insoluble in nonpolar organic solvents, has been shown to be active against *Staphylococcus* and *Colibacillus*, which are ordinarily resistant to other antibiotics.

3,755,294

PROCESS FOR THE PRODUCTION OF D-ARABINOSE

Raoul Guillaume Philippe Walon, Brussels, Belgium, assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 26, 1970, Ser. No. 84,233
Int. Cl. C07c *69/20*
U.S. Cl. 260—209 R 4 Claims

This invention discloses a process for the production of arabinose, which comprises reacting calcium gluconate with hydrogen peroxide in the presence of a catalytic amount of ferric gluconate.

3,755,295

1-(2-AMINO-2-DEOXY-β-D-RIBOFURANOSYL) PYRIMIDINES AND DERIVATIVES THEREOF

Julien P. Verheyden, and John G. Moffatt, both of Los Altos, Calif., assignors to Syntex Corporation, Republic of Panama

Filed Oct. 24, 1969, Ser. No. 869,355
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R 18 Claims

1-(2-Amino-2-deoxy-β-D-ribofuranosyl)pyrimidines and the corresponding 2-aminoacylamido and 2-dipeptidylamido compounds are useful in controlling metabolic processes.

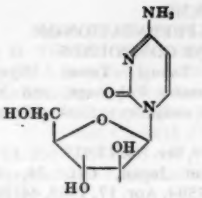
3,755,296

PROCESS FOR PREPARING 1-β-D-ARABINOFURANOSYL-CYTOSINE AND 2,2′-CYCLOCYTIDINE

Tadashi Kanai; Kiyomi Kikugawa; Saeko Asakura; Osamu Maruyama; Motonobu Ichino, and Tokuro Nakamura, all of Oita-ken, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed July 17, 1970, Ser. No. 55,966
Claims priority, application Japan, July 24, 1969, 44/58517; Dec. 4, 1969, 44/97482; Dec. 4, 1969, 44/97483; Mar. 24, 1970, 45/24744
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R 17 Claims

The present invention relates to a novel process for preparing 1-β-D-arabinofuranosylcytosine (spongocytidine) expressed by the general formula (I) and a process for preparing as an intermediate thereof 2,2′-cyclocytidine(2,2′-anhydro-1-β-D-arabinofuranosylcytosine) (II) with good efficiency.



3,755,297

CONTINUOUS SECONDARY CELLULOSE ESTER PROCESS

Kenneth C. Campbell; James M. Davis; Gary E. Frye, and Robert E. Woods, all of Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,607
Int. Cl. C08b *3/06*
U.S. Cl. 260—227 4 Claims

A continuous process for the preparation of a cellulose secondary acetate flake comprising the following steps:

1. slurrying cellulose in a lower fatty acid/water slurry;
2. washing said slurry with lower fatty acid and extracting water from the cellulose slurry;
3. adding an effective amount of an acid catalyst;
4. mixing the pretreated cellulose containing the lower fatty acid and catalyst with a lower fatty acid/lower fatty acid anhydride mixture containing excess anhydride and esterifying the cellulose mixture;
5. blending the esterified dope with an aqueous solution of neutralizing salt;
6. desulfating and hydrolysis of the acetylated dope;
7. adding an aqueous neutralizing salt to the hydrolyzed dope; and
8. flash cooling the dope.

3,755,298

SUBSTITUTED HEXAHYDROAZEPINECARBOXYLIC AMIDES

Adolf Fischer, Mutterstadt; Wolfgang Rohr, Mannheim, and Walter-Wielant Wiersdorff, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Land Rhineland-Pfalz, Germany

Filed May 12, 1971, Ser. No. 142,768
Claims priority, application Germany, June 9, 1970, P 20 28 168.9
Int. Cl. C07d *41/04*
U.S. Cl. 260—239 BF 5 Claims

New and valuable substituted hexahydro-1H-azepine-1-carboxylic amides having a good herbicidal action and a process for controlling the growth of unwanted plants with these compounds.

3,755,299

6-HETEROCYCLIC SUBSTITUTED PENICILLINS

Jerry A. Weisbach, Cherry Hill, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Aug. 13, 1971, Ser. No. 171,714
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 7 Claims

6-Heterocyclic α-amino or α-hydroxyacetamido-penicillins are prepared by conventional 6-acylation reactions. The products are antibacterial agents.

3,755,300
PROCESS FOR THE PREPARATION OF BENZODIAZEPINE COMPOUNDS

Ryuji Tachikawa; Hiromu Takagi; Tetsuo Miyadera; Toshiharu Kamioka; Mitsunobu Fukunaga, and Yoichi Kawano, all of Tokyo, Japan, assignors to Sankyo Company Limited

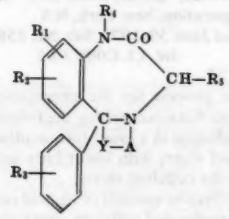
Filed Oct. 22, 1969, Ser. No. 13,919

Claims priority, application Japan, Oct. 24, 1968, 43/77500; Oct. 24, 1968, 43/77504; Apr. 17, 1969, 44/29968

Int. Cl. C07d *87/54, 91/42, 85/48, 93/01, 93/08, 51/46, 53/06, 27/30*

U.S. Cl. 260—239.3 T **4 Claims**

A process for the preparation of a benzodiazepine compound having the formula



wherein

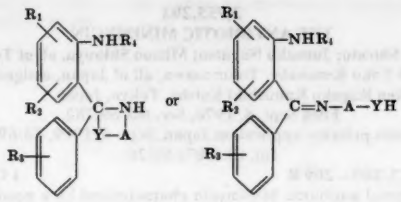
R_1, R_2 and R_3 may be the same or different and each represents
- hydrogen atom,
- a lower alkyl group,
- a lower alkoxy group,
- a halogen atom,
- hydroxy group,
- nitro group,
- cyano group,
- an acyl group,
- trifluoromethyl group,
- amino group,
- an acylamino group,
- a N-mono(lower alkyl)amino group,
- a N-di(lower alkyl)amino group,
- an acyloxy group,
- carboxyl group,
- an alkoxycarbonyl group,
- carbamoyl group,
- a N-mono(lower alkyl)carbamoyl group,
- a N-di(lower alkyl)carbamoyl group,
- a lower alkylthio group,
- a lower alkylsulfinyl group or
- a lower alkylsulfonyl group;

R_4 represents
- hydrogen atom,
- a lower alkyl group,
- a cycloalkyl group,
- an aralkyl group,
- an aryl group or
- phenacyl group;

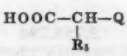
R_5 represents
- hydrogen atom or
- a lower alkyl group;

A represents
- an alkylene group which may be straight or branched; and

Y represents
- oxygen atom or sulfur atom which comprises reacting a compound having the formula



wherein R_1, R_2, R_3, R_4, Y and A are as defined above or a mixture of these compounds with a reactive derivative of a compound having the formula



wherein Q represents an acid radical of a reactive ester and R_5 is as defined above.

The benzodiazepine compounds are useful as a minor tranquilizer.

3,755,301
MANUFACTURE OF 11-ALKYL STEROIDS

John S. Baran, Winnetka, and Chi-Dean Liang, Glenview, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed June 23, 1972, Ser. No. 265,802

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **4 Claims**

11β-Alkyl steroids are advantageously produced from 11-keto-9β-estra-1,3,5(10)-triene-3,17β-diol, which compound is obtained, typically, by rearrangement of 9α, 11α-epoxyestra-1,3,5(10)-triene-3,17β-diol or an acylated derivative thereof.

3,755,302
PROCESS FOR THE PRODUCTION OF 17-MONESTERS OF 17α, 21-DIHYDROXY-STEROIDS AND PRODUCTS THEREOF

Alberto Ercoli, Milano; Rinaldo Gardi, Carate Brianza, and Romano Vitali, Casatenovo, all of Italy, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Filed June 22, 1970, Ser. No. 48,481

Claims priority, application Italy, June 26, 1969, 18717/A69

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **20 Claims**

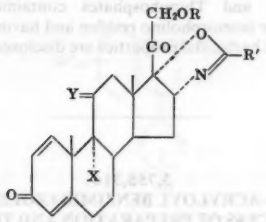
This invention relates to an improved process for the preparation of 17-monoesters of 17α, 21-dihydroxy-20-keto-steroids which consists in carrying out the hydrolysis of corresponding 17,21-cyclic orthoesters in a buffered aqueous-organic medium at a pH from about 4 to about 6. This invention also relates to new 17-esters of 17α, 21-dihydroxy-steroids having an epoxy group at the 9β, 11β-position, useful as intermediates for the preparation of therapeutically active 17-esters.

3,755,303
STEROIDO(16 ALPHA, 17 ALPHA-D)-OXAZOLINES AND THEIR PREPARATION

Giangiacomo Nathansohn, Milan, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

Filed June 24, 1971, Ser. No. 156,538
Int. Cl. C07c *173/00, 173/10*
U.S. Cl. 260—239.55 7 Claims

Steroido[16α,17α-d]oxazolines of the formula



wherein X represents hydrogen or halo; Y represents H(OH) or O; or X and Y together represent a double bond between the carbon atoms in 9 and 11 positions; R represents H or lower acyl; and R′ represents lower alkyl.

3,755,304
SAPOGENOIC ACID DERIVATIVES

Derek Harold Richard Barton, and Peter George Sammes, both of c/o Department of Chemistry, Imperial College of Science & Technology, London, S.W. 7, England

Filed Oct. 8, 1970, Ser. No. 79,345
Int. Cl. C07c *173/00, 173/08*
U.S. Cl. 260—239.55 R 13 Claims

Sapogenoic acids and derivatives thereof are reacted with carbon nucleophiles to introduce the nucleophilic residue into the 16-position. The reaction products can be converted into 16-substituted Δ^{16}-pregn-20-ones.

3,755,305
PROCESS FOR THE PURIFICATION OF CAPROLACTAM

Hans Helmut Schwarz, Krefeld, and Otto Immel, Krefeld-Uerdingen, both of Germany, assignors to Farbenfabricken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 15, 1971, Ser. No. 134,310
Claims priority, application Germany, Apr. 22, 1970, P 20 19 431.4
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A 4 Claims

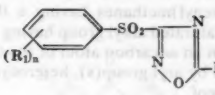
The invention relates to a process for the purification of ε-caprolactam prepared by catalytic cyclohexanone oxime rearrangement in the gaseous phase which comprises mixing the crude lactam at a temperature above its melting point with at least one branched aliphatic hydrocarbon, the mixing proportions ensuring the formation of a liquid lactam phase in addition to the hydrocarbon phase, separating off the hydrocarbon phase, recrystallising the dissolved lactam from the hydrocarbon phase by cooling, and subjecting the lactam crystals thus obtained to fractional vacuum distillation.

3,755,306
3-ARYLSULFONY L-1,2,4-OXADIAZOLES

Uwe D. Treuner, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 190,692, Oct. 19, 1972, abandoned. This application Sept. 5, 1972, Ser. No. 285,968
Int. Cl. A61k *27/00*; C07d *85/52*
U.S. Cl. 260—239.9 11 Claims

3-Arylsulfonyl-1,2,4-oxadiazoles of the following general formula



are useful as antimicrobial agents, hypoglycemic agents and antiinflammatory agents.

3,755,307
5-CINNAMOYL-PYRROLE-2-ACETIC ACIDS AND ESTERS

John Robert Carson, Norristown, Pa., assignor to McNeill Laboratories, Inc., Fort Washington, Pa.

Filed Jan. 21, 1972, Ser. No. 219,862
Int. Cl. C07d *27/22*
U.S. Cl. 260—240 J 5 Claims

Compounds of the class of 5-acyl-pyrrole-2-acetic acids useful for their analgetic activity and the corresponding lower-alkyl esters used as precursors thereof.

3,755,308
NITROFURFURYLIDENEAMINO DERIVATIVE OF OCTAHYDROBENZTHIAZINE-1,-DIOXIDE AND PROCESS FOR ITS PREPARATION

Karl Heinrich Mayer, Opladen-Quettingen, and Axel Haberkorn, Wuppertal-Elberfeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 19, 1971, Ser. No. 135,375
Claims priority, application Germany, Apr. 25, 1970, P 20 20 298.6
Int. Cl. C07d *93/12*
U.S. Cl. 260—240 A 1 Claim

4-(5′-Nitrofurfurylideneamino)-octahydro-4H-1,4-benzthiazine-1,1-dioxide is obtained from 4-amino-octahydro-4H-1,4-benzthiazine-1,1-dioxide and 5-nitro-2-furfural, or a reactive derivative thereof. The compound has antiparasitic activity, particularly against *Trypanosoma cruzi*.

3,755,309
2-SUBSTITUTED PYRIDINE DERIVATIVES AND SYNTHESIS THEREOF

Tohru Takahashi; Hachiro Sugimoto, and Koichiro Ueda, all of Tokyo, Japan

Filed Nov. 11, 1971, Ser. No. 197,937
Claims priority, application Japan, July 16, 1971, 46/52412
Int. Cl. C07d *31/44*
U.S. Cl. 260—240 J 9 Claims

2-[β-(N-acylhomopiperazino) pyridines, the new compound, as well as their salts of pharmacologically acceptable acids and the synthesis thereof. The compounds possess excellent antalgic, anti-phlogistic and anti-edematous effects with low toxicity and so are suitable as medicament. They are orally or parenterally administered to the patients.

3,755,310
SUBSTITUTED BIS(P-DIALKYLAMINOPHENYL)METHANE PHOTOCONDUCTORS

Louis J. Rossi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 862,923, Oct. 1, 1969, Pat. No. 3,647,431. This application May 14, 1971, Ser. No. 143,605
Int. Cl. C09b 23/14
U.S. Cl. 260—240.9 5 Claims

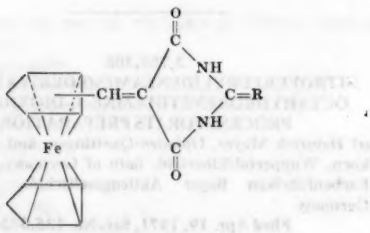
Novel organic photoconductors for electrophotographic elements as described. These novel photoconductors are bis-(p-dialkylaminophenyl)methanes having a third substituent comprising an unsaturated alkyl group having two or four carbon atoms wherein an ω-carbon atom of the third substituent is fully substituted by aryl group(s), heterocyclic group(s) or combinations thereof.

3,755,311
FERROCENE DERIVATIVES

Roswitha Zimmer-Galler, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 19, 1967, Ser. No. 670,018
Int. Cl. C07d 51/00
U.S. Cl. 260—240 R 4 Claims

Compounds useful as burning rate catalysts for solid propellants characterized by low volatility and having the formula



are disclosed wherein R is O, NR′ and S and each R′ is hydrogen, lower alkyl, phenyl, cyano and nitro.

3,755,312
6-SUBSTITUTED-1, 2,4-PYRIMIDO[4,5-E]THIADIAZINE-1,1-DIOXIDES

Paul L. Anderson, Dover, and Robert E. Manning, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 193,555, Oct. 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 108,221, Jan. 20, 1971, abandoned. This application Dec. 6, 1971, Ser. No. 205,349
Int. Cl. C07d 99/10
U.S. Cl. 260—243 R 12 Claims

Substituted 8-amino 1,2,4-pyrimido[4,5-e]-thiadiazines-1,1-dioxides, e.g., 8-amino-3-ethyl-6-methylthio-1,2,4-pyrimido[4,5-e]thiadiazine-1,1-dioxide, are prepared from substituted 4,6diamino-5-pyrimidine-sulfonamides and are useful as anti-hypertensives.

3,755,313
PESTICIDAL DERIVATIVES OF 0,0-DIALKYL-S-THIOMORPHOLINOCARBONYLMENTHYL-THIOPHOSPHATES AND DITHIOPHOSPHATES

Ernst Beriger, Neuallschwil, Switzerland, assignor to Ciba-Geigy A.G., Basel, Switzerland

Filed Jan. 17, 1972, Ser. No. 218,552
Division of Ser. No. 815,522, Apr. 8, 1969, Pat. No. 3,658,800.
Claims priority, application Switzerland, Apr. 16, 1968, 5552/68
Int. Cl. C07d 93/10
U.S. Cl. 260—243 B 3 Claims

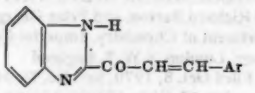
Phosphates and Thiophosphates containing a special morpholino or isomorpholino residue and having insecticidal, acaricidal and herbicidal properties are disclosed.

3,755,314
NOVEL 2-ACRYLOYL BENZIMIDAZOLES, THEIR PROCESS OF PREPARATION AND THEIR THERAPEUTIC APPLICATION

Claude P. Fauran, Paris; Jeannine A. Eberle, Chatou; Guy M. Raynaud, Paris, and Janine M. Thomas, Neuilly, all of France, assignors to Delalande S.A., Courbevoie (Hauts-de-Seine), France

Filed Nov. 26, 1971, Ser. No. 202,637
Claims priority, application France, Dec. 1, 1970, 7043089
Int. Cl. C07d 49/38
U.S. Cl. 260—240 J 2 Claims

A compound of the formula



in which Ar is unsubstituted phenyl, phenyl mono- or di-substituted by halogen, alkoxy having one to six carbon atoms or dimethylamino, 2-furyl, 2-thienyl or 3-pyridyl. The compounds are prepared by reacting 2-acetyl benzimidazole with an aldehyde of the formula ArCHO. The compounds possess hypotensive and diuretic properties.

3,755,315
2-H-PYRIDO(2,3-A)PYRAZINE DERIVATIVES AND THEIR ACID-ADDITION SALTS

Hideo Kato, Motomachi, Japan, assignor to Hokuriku Seiyaku Co., Ltd., Fukui, Japan

Filed Aug. 5, 1970, Ser. No. 61,422
Int. Cl. C07d 51/72, 94/13
U.S. Cl. 260—243 A 9 Claims

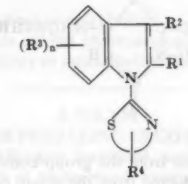
The present invention provides new 2-azaquinolizidine derivatives and their acid-addition salts, which have neurotropic and antihistaminic effects and are valuable as medicaments, as well as a process for the production of these compounds.

3,755,316
THIAZOLINYL AND THIAZINYL DERIVATIVES OF INDOLES

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Highland Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 20, 1971, Ser. No. 191,092
Int. Cl. C07d 93/06
U.S. Cl. 260—243 R 8 Claims

Thiazolinyl and thiazinyl derivatives of indoles are provided having the strcture



and which are useful as anti-inflammatory atents.

3,755,317
THIOAMIDES OF 4-SUBSTITUTED SYRINGIC ACID AND THEIR PREPARATION

Giorgio Pifferi, Milan, Italy, assignor to I.S.F., S.p.A., Milan, Italy

Filed Nov. 27, 1970, Ser. No. 93,460
Claims priority, application Italy, July 31, 1970, 28164 A/70
Int. Cl. C07d 87/46
U.S. Cl. 260—247.1 2 Claims

New thioamides of 4-substituted zyringic acid are provided, which are characterized with respect to the corresponding amides in that they have a more prolonged effect. The new thioamides herein provided can be used in therapy showing a prolonged ataraxic or tranquilizing action upon the central nervous system without comprising the reflexes and the motorial coordination; furthermore, they show a very low toxicity, a favourable therapeutic coefficient and the absence of collateral effects on the circle.

3,755,318
PROCESS FOR PRODUCING PRIMARY CARBOXYLIC ACID AMIDES

Herbert Eck; Joseph Heckmaier, and Hellmuth Spes, all of Burghausen-Obb, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Continuation of Ser. No. 782,744, Dec. 10, 1968, abandoned. This application Apr. 5, 1971, Ser. No. 131,541
Int. Cl. C07d 87/34
U.S. Cl. 260—247.7 H 4 Claims

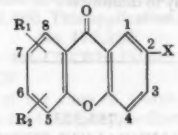
Process for producing primary carboxylic acid amides of the general structure RR'N–CO–CHR''R''' by reacting a ketene having the general formula R''R'''C=CO with an amine having the general structure HNRR', where R and R' are hydrogen, substituted or unsubstituted aryl- or alkyl residues, which can form, together, an alicyclic or a heterocyclic nonaromatic ring, and R'' and R''' can be hydrogen, alkyl- or aryl residues, where the alkyl residues may have up to four carbon atoms, in which the reaction of ketene with amine is carried out in the corresponding carboxylic acid amide at a temperature above the melting point and below the decomposition point of the reaction mixture.

3,755,319
XANTHONE DERIVATIVES

David Edmund Bays, London, England, assignor to Allen & Hanburys Limited, London, England

Division of Ser. No. 90,444, Nov. 17, 1970. This application Mar. 8, 1972, Ser. No. 232,954
Claims priority, application Great Britain, Nov. 27, 1969, 58121
Int. Cl. C07d 99/04
U.S. Cl. 260—247.5 R 6 Claims

Xanthone derivatives of the formula:



in which X represents a carboxyl or 5-[1H]-tetrazolyl group; and R_1 and R_2 which may be the same or different each represent a hydrogen atom, an alkyl group containing from 1 to 4 carbon atoms, a nitro group, a halogen atom or a group of the formula $-NR_3R_4$ or OR_3 or $NR_3SO_2R_4$, (in which the groups R_3 and R_4 which may be the same or different each represent a hydrogen atom, a phenyl group, a benzyl group or an alkyl group which may optionally be substituted by an alkoxy group containing from 1 to 6 carbon atoms, a phenoxy group, phenyl group, an amino, alkylamino or dialkylamino group or by one or more hydroxy groups; and in which R_3 is a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms and R_4 is an alkyl group containing from 1 to 6 carbon atoms); with the proviso that when X represents a carboxyl group R_1 and R_2 do not both represent hydrogen atoms; and pharmaceutically acceptable non-toxic salts and esters of such compounds.

These derivatives have pharmacological activity and in particular inhibit the release of spasmogen mediators from antigen-antibody reactions.

3,755,320
CONTINUOUS MANUFACTURE OF DICHLOROISOCYANURIC ACID

Horst Goelz, Schwetzingen, and Hubert Suter, Ludwigshafen, both of Germany, assignors to Badische Anilen & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Nov. 4, 1970, Ser. No. 86,987
Int. Cl. C07d 55/40
U.S. Cl. 260—248 C 6 Claims

Continuous manufacture of dichloroisocyanuric acid by reacting cyanuric acid with chlorine aqueous alkaline solution at a specific ratio of the reactor dimensions, under specific conditions of temperature and flow rate of the reaction mixture and at a specific molar ratio of the starting materials.

The compound produced by the process of the invention is a valuable intermediate in the manufacture of bleaches, oxidizing agents, detergents and disinfectants.

3,755,321
2,4,6-TRIPICRYL-S-TRIAZINE

Joseph Carl Dacons, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1968, Ser. No. 779,308
Int. Cl. C07d 55/12
U.S. Cl. 260—248 CS 5 Claims

An explosive compound of 2,4,6-tripicryl-s-triazine and its method of preparation.

3,755,322
DIAMINO-S-TRIAZINES

Roland Winter, Armonk, and Raymond Seltzer, New York, both of N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed July 15, 1970, Ser. No. 55,240
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.6 **19 Claims**

The disclosure covers diamino-s-triazines which are useful in polymer synthesis, such as polyimides. Also covered are dinitro-s-triazines which can be used as intermediates for the diamino compounds. The diamines are prepared by a condensation of 2-substituted-4,6-dichlorotriazines with diamines or with nitroamines. The product from the latter reaction can be reduced subsequently to diamines.

3,755,323
TRIAZINYLAMINOALKYL PHOSPHONATES

Edward D. Weil, Hastings-on-Hudson, and Ralph Fearing, Bardonia, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,364
Int. Cl. C07d *55/22*
U.S. Cl. 260—249.6 **5 Claims**

Novel triazinylaminoalkyl phosphonates, methods for their preparation as well as for their use in preparing flameproof finishes for textiles are disclosed. These triazinylaminoalkyl phosphonates are found to be low in cost and of minimal toxicity and their use for the flameproofing of textiles provides highly durable finishes.

3,755,324
3-(5-NITRO-2-FURYL)-1H-PYRAZOLO[3,4]PYRIMIDINS-4(5H)-ONES

William Hoyle, Bramhall, and Graham Arton Howarth, Handforth, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,531
Claims priority, application Great Britain, Oct. 28, 1969, 52,663/69
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.4 F **6 Claims**

Compounds of the class of 3-(5-nitro-2-furyl)- 1H-pyrazolo[3,4-d]pyrimidin-4(5H)-one have antimicrobial properties and are active ingredients in pharmaceutical compositions and animal feedstuff compositions, an illustrative example is 1,6-dimethyl-3-(5-nitro-2-furyl)-1H-pyrazolo[3,4-d]pyrimidin-4(5H)-one.

3,755,325
IMIDAZOLIUM QUATERNARY SALTS AND METHODS OF PREPARING THE SAME

Robert L. Clark, Woodbridge, and Arsenio A. Pessolano, Colonia, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 806,719, March 12, 1969, abandoned. This application Aug. 31, 1971, Ser. No. 176,679
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 N **4 Claims**

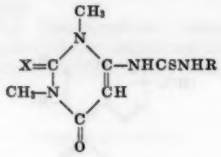
Imidazolium quaternary salts, specifically 3-(2-loweralkyl-4-amino-5-pyrimidinylmethyl)-1,2-dialkyl substituted imidazolium quaternary salts, having anti-coccidial activity are provided.

3,755,326
URACIL THIOUREAS

Arthur Berger, Skokie, Ill., and Edeltraut E. Borgaes, Sindelfingen, Germany, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 849,890, Aug. 13, 1969, abandoned. This application Dec. 6, 1971, Ser. No. 205,328
Int. Cl. C07d *51/38*
U.S. Cl. 260—256.5 R **12 Claims**

Uracil thioureas having the general formula



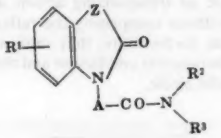
wherein X is selected from the group consisting of O and S, and wherein R is selected from the group consisting of lower alkyl having from one to four carbon atoms, allyl, methallyl and phenyl. Said compounds are useful as central nervous system anti-depressants.

3,755,327
1(HOMO)PIPERAZINYL CARBONYL ALKYL 2(3H) BENZIMIDOZALINONES AND 2(3H) BENZOTHIOZOLINONE

Suminori Umio, Kawanishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka-shi, Japan

Continuation-in-part of Ser. No. 812,448, April 1, 1969, Pat. No. 3,661,921, which is a continuation-in-part of Ser. No. 733,828, June 3, 1968, abandoned. This application Sept. 4, 1970, Ser. No. 69,983
Claims priority, application Japan, June 5, 1967, 42/36113; Sept. 30, 1967, 42/62872
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 C **48 Claims**

N-substituted and N,N-disubstituted aminocarbonylalkyl compounds of the formula:



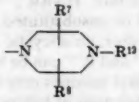
wherein

Z is sulfur or lower alkylimino;

A is lower alkylene;

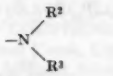
R^1 is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl; and the group of the formula:

is 1-aziridinyl a 6-membered heterocyclic group selected from 2,3 or 4-hydroxypiperidino, morpholino, and a piperazine group of the formula:



in which R^7 and R^8 are each hydrogen or lower alkyl and R^{12} is hydrogen, lower alkyl, hydroxy(lower)alkyl, lower al-

kanoyl(lower)alkyl, lower alkanoyloxy(lower)alkyl, higher alkanoyloxy(lower)alkyl, linoloyloxy(lower)alkyl, lower alkoxycarbonyl(lower)alkyl, phenyl(lower)alkanoyloxy(lower)alkyl, 2,3,4,5 or 6-tri(lower)alkoxybenzoyloxy(lower)alkyl, phenyl(lower)alkyl, 2,3,4,5 or 6-di(lower)alkoxyphenyl(lower)alkyl, lower alkenyl, lower alkynyl, phenyl or benzoyl; or a 4-lower alkyl-1-homopiperazinyl; provided that R^1 is not hydrogen when the group of the formula:



represents a 1-aziridinyl or morpholino.

These compounds exhibit pharmacological activity such as antiinflamatory activity or antiarrhythmic activity.

3,755,328

PROCESS FOR PREPARING ERGOT ALKALOIDS

Paul Stadler, Biel-Benken Baselland, and Albert Hofmann, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., (A/K/A Sandoz AG), Basel, Switzerland

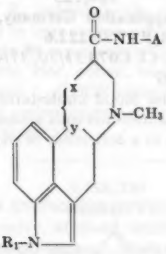
Continuation-in-part of Ser. No. 27,156, April 9, 1970, abandoned. This application July 19, 1972, Ser. No. 273,114

Claims priority, application Switzerland, Apr. 18, 1969, 5895/69; Sept. 2, 1969, 13262/69

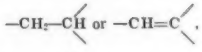
Int. Cl. C07d *43/20*

U.S. Cl. 260—268 PE **6 Claims**

The invention concerns a novel process for the production of a compound of the formula:



in which $\widehat{x\,y}$ is the group



and

R_1 is hydrogen, lower alkyl, allyl or benzyl and

—NH—A is a cyclic polypeptide of the type known in ergot peptide alkaloids. lysergic acid halides, obtained by reaction with thionyl chloride, phosgene or oxalyl chloride are reacted with a salt of the polypeptide amine in the presence of an acid binding agent.

Many of the above compounds are of known therapeutic value, and can be described as vaso-active and also have activity on the central nervous system.

3,755,329

NITROGEN-HETEROCYCLYLGOLD(I) COMPOUNDS

Lawrence Graham Vaughan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 715,960, March 26, 1968, abandoned. This application Dec. 22, 1970, Ser. No. 100,797

Int. Cl. C07f *1/12*

U.S. Cl. 260—270 R **22 Claims**

Disclosed herein are nitrogen-heterocyclylgold(I) compounds wherein the gold is bonded directly, or via a p-phenylene group, to carbon of the heterocyclic nucleus, and a process for their preparation comprising reacting a heterocyclyllithium compound with a trihydrocarbyl-phosphorus, -arsenic, or -antimony-gold halide. The compounds are useful for gold plating and for printing electrical circuits.

3,755,330

1-α-HYDROXYBENZYL 3-METHYL, 1,2,3,4-TETRAHYDROISO QUINOLINO-2-CARBONITRILES

William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 51,403, May 27, 1970, Pat. No. 3,637,709, which is a continuation-in-part of Ser. No. 663,218, Aug. 25, 1967, Pat. No. 3,565,900. This application Aug. 16, 1971, Ser. No. 172,285

Int. Cl. C07d *35/40*

U.S. Cl. 260—283 CN **4 Claims**

Compounds are of the class of 1-aryl-3-amino-1,5,6,10b-tetrahydro-3H-oxazolo[4,3-a]isoquinolines, useful as central nervous system stimulants.

3,755,331

1-N-LOWER ALKYLPIPERIDYL-1H-PYRAZOLO[3,4-B]PYRIDINES AND PYRIDINOLS

Hoehn, Hans, Tegernheim, and Ernst Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed July 15, 1970, Ser. No. 55,250

Int. Cl. C07d *29/26*

U.S. Cl. 260—293.6 **4 Claims**

New 1-N-lower alkylpiperidyl-1H-pyrazolo[3,4-b]pyridines and pyridinols are useful as hypoglycemic agents.

3,755,332

SUBSTITUTED 4 INDAZOLAMINOQUINOLINES

Jan W. F. Wasley, Ossining, and Abraham Wajngurt, Riverdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 818,044, April 21, 1969, abandoned, and a continuation-in-part of Ser. No. 725,176, April 29, 1968, abandoned. This application July 1, 1971, Ser. No. 159,061

Int. Cl. C07d *33/50*

U.S. Cl. 260—288 R **16 Claims**

Substituted indazolaminoquinolines, acid addition salts thereof as well as N-oxides thereof are anti-inflammatory, anti-hypertensive and anti-malarial agents. Illustrative embodiments are 7-chloro-4-(6-indazolamino)-quinoline and ethyl 7-chloro-4-(6-indazolamino)-quinoline-3-carboxylate.

3,755,333

PROCESS FOR THE PREPARATION OF VINCAMINE

Csaba Szantay; Lajos Szabo; Gyorgy Kalaus, and Vilmos Simonidesz, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest X, Hungary

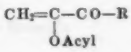
Filed May 2, 1972, Ser. No. 249,492

Claims priority, application Hungary, May 7, 1971, RI-430

Int. Cl. C07d *27/54*

U.S. Cl. 260—293.53 **6 Claims**

A new process for the preparation of vincamine and of homologues thereof containing acyl groups of 2 to 6 carbon atoms in the 14-position, wherein 1-ethyl-2,3,4,6,7,12-hexahydroindolo[2,3-a]quinolizine is reacted with an α-acyloxy-acrylic acid derivative of the formula



(R = C_1-$_5$ alkyl) to obtain the corresponding 1-(β-acyloxy-β-R-oxycarbonyl-ethyl)-1-ethyl-1,2,3,4,6,7-hexahydro-12H-in-

dolo[2,3-a]quinolizine compound, this is converted by deacylation and reduction into the corresponding 1-(β-hydroxy-β-R-oxycarbonyl-ethyl)-1-ethyl-1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]quinolizine; the latter is treated with an oxidizing agent to yield a mixture of the desired vincamine derivative and the 14-epimer thereof. The latter can be epimerized in a known manner; by using silver carbonate as oxidizing agent, the epimerization occurs simultaneously.

3,755,334

NEW QUATERNIZATION METHOD

Harold Z. Sommer, 610 Lafayette St., Havre de Grace, Md.

Filed June 26, 1970, Ser. No. 50,352

Int. Cl. C07d *29/12*

U.S. Cl. 260—293.51 **9 Claims**

A method for the synthesis of quaternary ammonium compounds and tertiary amines from primary and secondary amines with an alkylating agent and an organic base.

3,755,335

CERTAIN 1,2,3,5,6,12,13A-OCTAHYDRO-12-OXO-[3,2,1-D,E]PYRIDO-[1,5]-NAPHTHYRIDINES

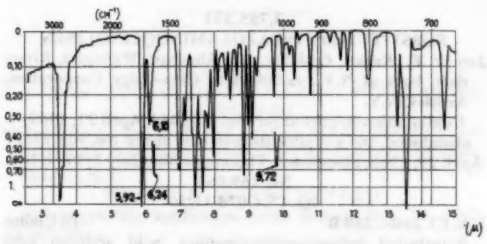
Claude Thal, Malakoff; Pierre Potier, Bois D'Arcy, and Henri Philippe Husson, Chevreuse, all of France, assignors to Anvar-Agence Nationale de Valorisation de la Recherche, Paris, France

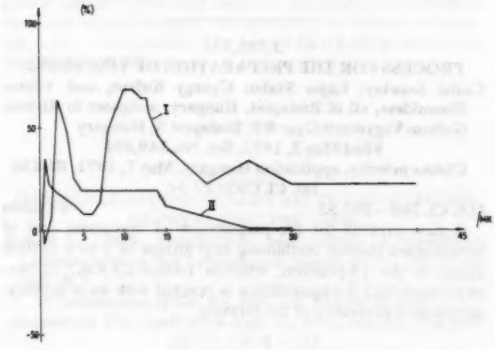
Filed Mar. 17, 1971, Ser. No. 125,029

Claims priority, application France, Mar. 26, 1970, 7010846

Int. Cl. C07d *29/22*

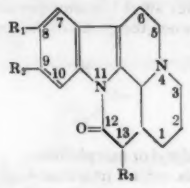
U.S. Cl. 260—293.53 **3 Claims**





The invention relates to new indole derivatives which are useful therapeutical agents.

Said new derivatives are 1,2,3,5,6,12,13,13a-octahydro-12-oxo-[3,2,1-d,e]-indolo-[3,2,1-i,j]-pyrido-[1,5]-naphthyridines having the general formula



in which R_1 and R_2, which may be the same or different, are selected from H, OH and OCH_3, and R_3 is selected from H, Cl, Br and $—COCO_2C_2H_5$.

3,755,336

SULFUR-CONTAINING DERIVATIVES OF 2-METHYL-4-HYDROXYMETHYL-5-METHYLENE-PYRIDINE

Gustav Schorre, Darmstadt, Germany, and Herbert Nowak, Altdorf/Uri, Switzerland, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

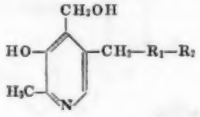
Continuation-in-part of Ser. No. 735,182, June 7, 1968, Pat. No. 3,625,949. This application July 19, 1971, Ser. No. 164,123

Claims priority, application Germany, June 8, 1967, M 74311; Apr. 18, 1968, P 17 70 222.6

Int. Cl. C07d *31/50, 31/48*

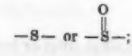
U.S. Cl. 260—294.8 G **12 Claims**

For descreasing the blood cholesterol level, ameliorating dysfunctions of the central nervous system and increasing the tolerance of animals to a deficiency of oxygen, compounds of the formula:



wherein

R_1 represents



and

R_2 represents lower acyl, lower unsaturated alkyl, unsubstituted alkyl and substituted alkyl; with the provision that when R_1 represents —S—, R_2 is other than ethyl,β-chloroethyl or β-hydroxyethyl.

3,755,337

MANUFACTURE OF 1,1-DISUBSTITUTED-4,4-BIPYRIDYLIUM SALTS

John Gerard Carey, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 20, 1970, Ser. No. 82,503

Claims priority, application Great Britain, Oct. 27, 1969, 52,450/69

Int. Cl. C07d *31/32*

U.S. Cl. 260—295 Q **12 Claims**

A process for the manufacture of a 1,1′-disubstituted-4,4′-bipyridylium salt which comprises reacting the corresponding

N-substituted pyridinium salt with cyanamide ions, for example provided by an alkali metal cyanamide, and subsequently oxidising the resulting interaction product, for example by means of an oxidising agent which is an electron acceptor and which has a redox potential in water more positive than −0.50 volt as compared with the saturated calomel electrode.

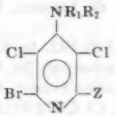
3,755,338

4-AMINO-6-BROMO-3,5-DICHLOROPICOLINIC ACID COMPOUNDS

Alin H. Gulbenk, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 17, 1970, Ser. No. 99,304
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 R **2 Claims**

Compounds corresponding to the formula



wherein R_1 and R_2 independently represents hydrogen or loweralkyl of one to four carbon atoms; Z represents carboxylic acid (—COOH), carboxylic acid amide (—$CONR_1R_2$ wherein R_1 and R_2 independently represents hydrogen or loweralkyl of one to four carbon atoms), carboxylic acid salt (—COOM wherein M represents alkali metal, alkaline earth metal, copper, iron, zinc, cobalt, nickel and ammonium) or carboxylic acid ester (—COOR wherein R represents loweralkyl of one to four carbon atoms) are prepared and are useful as fungicides and algaecides.

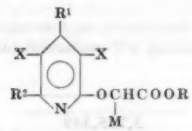
3,755,339

ESTERS OF AMINOHALOPYRIDYLOXY ACIDS

Lennon M. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 26, 1971, Ser. No. 166,308
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 R **6 Claims**

Compounds corresponding to the formula



wherein X represents chloro, bromo, or fluoro; R represents alkyl of one to 12 carbon atoms or a radical having the formula $-(CH_2)_nOR^3$ wherein *n* represents an integer of from 2 to 4 and R^3 represents lower alkyl of one to four carbon atoms or phenyl; M represents hydrogen or methyl; R^1 represents hydrogen, loweralkyl of one to four carbon atoms, amino or loweralkylamino of one to four carbon atoms; and R^2 represents hydrogen, X, loweralkyl, amino or loweralkylamino, with the proviso that one of R^1 or R^2 is always amino or loweralkylamino and the other of R^1 and R^2 is always other than amino or loweralkylamino are prepared. These compounds are useful as herbicides and as active agents in compositions used as herbicides.

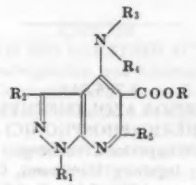
3,755,340

AMINO DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Hans Hoehn, Arberstrasse 12, Tegernheim, and Theodor Denzel, Bayreutherstrasse 13, Nurnberg, both of Germany

Continuation-in-part of Ser. No. 41,568, May 28, 1970, abandoned. This application Aug. 5, 1971, Ser. No. 169,536
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 B **22 Claims**

New amino derivatives of pyrazolo[3,4-b]pyridine-5-carboxylic acids and esters have the general formula



they are useful as ataractic, analgesic and antiinflammatory agents. In addition, the new compounds increase the intracellular concentration of adenosine-3′,5′-cyclic monophosphate.

3,755,341

PROCESS OF PREPARING PYRIDYL CARBINOLS AND KETONES

Wilford L. Mendelson, Philadelphia, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed July 8, 1971, Ser. No. 160,934
Int. Cl. C07d *31/32*
U.S. Cl. 260—297 R **6 Claims**

Process of preparing pyridyl carbinols and ketones by the reaction of a halopyridine, lithium and a carbonyl or nitrile compound in a one step procedure. The pyridyl carbinols and ketones are useful as intermediates for compounds having pharmacological activity, for example antihistamine or bronchodilator compounds.

3,755,342

CERTAIN 3-MONOSUBSTITUTED-4-THIA-2,6-DIAZABICYCLO[3.2.0]HEPTAN-7-ONES

Karl Heusler, Basel, and Bruno Fechtig, Reinach, Basel-Land, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,297
Claims priority, application Switzerland, Nov. 27, 1969, 17673/69; June 5, 1970, 8465/70
Int. Cl. C07d *99/10*
U.S. Cl. 260—306.7 **4 Claims**

2-R_1-3-R_2-4-thia-2,6-diazabicyclo[3.2.0]heptan-7-one compounds, wherein R_1 represents hydrogen or the acyl radical Ac of an organic acid and R_2 represents hydrogen or an optionally substituted hydrocarbon radical are useful as intermediates.

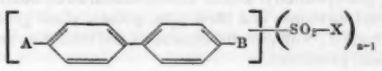
3,755,343

4-AROTRIAZOLYL-4′-AROXAZOLYL DIPHENYL DERIVATIVES

Rudolf Anliker, and Peter Liechti, both of Binningen, Switzerland, assignors to Ciba-Geigy AG., Basle, Switzerland

Filed June 16, 1970, Ser. No. 46,824
Claims priority, application Switzerland, June 27, 1969, 9868/69
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 D **2 Claims**

Compounds of the formula



wherein A denotes a benztriazole, naphthotriazole or acenaphthotriazole radical, B denotes a benzoxazole radical which may contain a condensed-on six-membered carbocyclic ring and wherein the radical A and B may contain substituents, such as halogen, halogenalkyl, alkyl, alkoxy, alkoxyalkyl, aminoalkyl, phenylalkyl, phenyl, carboxylic ester group, cyclohexyl or cyano. In the above formula *n* is an integer from 1 to 5 and X represents an optionally substituted amino group or a group —OM, wherein M denotes hydrogen or a salt-forming cation. Said compounds are valuable optical brightening agents.

3,755,344

3-OXO-BENZISOX AZOLEMETHYL-(THIONO) THIOLPHOSPHERIC (PHOSPHONIC) ACID ESTERS

Walter Lorenz, Wuppertal-Croneberg; Horst Boshagen, Haan/Rhineland; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Uppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

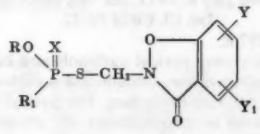
Filed Oct. 5, 1971, Ser. No. 186,812

Claims priority, application Germany, Oct. 9, 1970, P 20 49 691.7

Int. Cl. C07d *85/18*

U.S. Cl. 260—307 A **7 Claims**

3-oxo-benzisoxazolemethyl-(thiono)thiolphosphoric (phosphonic) acid esters of the general formula



(I)

in which

R is an alkyl radical with 1–6 carbon atoms,

R_1 is an alkyl or alkoxy radical with 1–6 carbon atoms,

Y and Y_1 each is a hydrogen atom, a halogen atom, a nitro group or an alkyl radical with 1–6 carbon atoms, and

X is an oxygen or sulfur atom,

which possess insecticidal and acaricidal properties.

3,755,345

BISTRIAZOLYL-BISPHENYL-METHANES AND THEIR SALTS

Erik Regel, Wuppertal-Cronenberg; Karl Heinz Buchel, Wuppertal-Elberfeld; Robert R. Schmidt, Leverkusen, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 24, 1970, Ser. No. 75,252

Claims priority, application Germany, Sept. 27, 1969, P 19 49 012.1

Int. Cl. A01n *9/22*; C07d *55/06*

U.S. Cl. 260—308 R **12 Claims**

Bistriazolyl-bisphenyl-methanes, i.e., 3,3'-(fluoro, chloro, bromo, alkyl, aryl and substituted aryl) bistraizolebisphenyl-(optionally halo, nitro, cyano, trifluoromethyl, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, phenyl, phenoxy, phenylthio, phenylsulfonyl and/or benzyl-substituted)-bistriazolylbisphenyl methanes and their salts, possess plant growth influencing, i.e., both growth stimulating and inhibiting and ever herbicidal properties.

3,755,346

2,6-BIS(TRIFLUOROMETHYL)-4-NITROBENZIMIDAZOLE

Quentin F. Soper, 2120 W. 38th St., Indianapolis, Ind.

Continuation-in-part of Ser. Nos. 812,449, April 1, 1969, abandoned, and Ser. No. 523,016, Jan. 26, 1966, Pat. No. 3,632,397, said Ser. No. 812,449, is a continuation-in-part of Ser. No. 726,540, May 3, 1968, abandoned. This application Apr. 28, 1971, Ser. No. 138,343

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **1 Claim**

2-Fluoroalkyl-6-fluoromethyl-4-nitrobenzimidazoles, useful as herbicides, insecticides and nematicides, and as intermediates in the preparation of other pesticides.

3,755,347

CERTAIN N-THIAZOLYL-UREAS

Jean Claude Guillot, Eauboone; Pierre Poignant, Lyon, and Jacques de Bazelaire de Lesseux, Rueilmalmaison, all of France

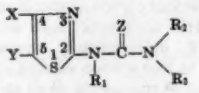
Division of Ser. No. 540,192, April 15, 1966, Pat. No. 3,551,442. This application July 20, 1970, Ser. No. 63,970

Claims priority, application France, Apr. 6, 1965, 6512116

Int. Cl. C07d *91/34*

U.S. Cl. 260—306.8 R **2 Claims**

A thiazole derivative having the general formula



and pesticidal compositions containing the same.

3,755,348

METHOD FOR SYNTHESIS OF AMINO PHOSPHINE SULFIDE ENANTIOMERS

Henry Tolkmith, 305 W. Carpenter, Midland, Mich.; James N. Seiber, 937 Ponderosa Pl., Davis, Calif., and Paul B. Budde, 1109 Mattes, Midland, Mich.

Division of Ser. No. 868,595, Oct. 22, 1969, Pat. No. 3,621,031, which is a continuation-in-part of Ser. No. 604,153, Dec. 23, 1966, abandoned. This application Dec. 14, 1970, Ser. No. 98,191

Int. Cl. C07f *9/24*

U.S. Cl. 260—309 **1 Claim**

Optically active isomers of asymmetrical diamino phosphine sulfides containing a P-imidazolyl radical are resolved and separated.

3,755,349

ALPHA-SUBSTITUTED BENZYL-IMIDAZOLES

Helmut Timmler; Wilfried Draber; Karl Heinz Buchel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 22, 1971, Ser. No. 165,321

Claims priority, application Germany, July 29, 1970, P 20 37 610.7

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **9 Claims**

1-Benzylimidazoles and 1-benzyl-1,2,4-triazoles bearing both an alkyl, phenyl or cycloalkyl group and a formyl, alkanoyl, aroyl or cycloalkylcarbonyl group on the α-carbon atom of the benzyl group, as well as the ketals, acetals, oximes and semicarbazones thereof, are antimycotic agents. They are prepared by treating the corresponding α-halobenzyl com-

pounds with imidazole or 1,2,4-triazole or the corresponding α-hydroxybenzyl compounds with the appropriate thionyl bisazole. A typical embodiment is the preparation of diphenyl-acetyl-imidazol-1-yl-methane from 1-bromo-1,1-diphenyl-2-propanone and imidazole.

3,755,350

SUBSTITUTED 3-PHENYL HYDANTOINS USEFUL AS FUNGICIDES

Michel Sauli, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

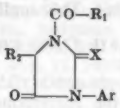
Filed Oct. 5, 1971, Ser. No. 186,772

Claims priority, application France, Oct. 6, 1970, 7036084; Aug. 6, 1971, 7128896

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **9 Claims**

The hydantoin derivatives of the formula:



wherein Ar represents phenyl, or phenyl carrying substituents selected from halogen, alkyl, alkoxy and trifluoromethyl, R_1 represents alkoxy or a grouping $—NR_3R_4$, in which R_3 and R_4 represent hydrogen, alkyl or alkenyl, R_2 represents hydrogen or alkyl, and X represents oxygen or sulphur, possess fungicidal properties.

3,755,351

CARBAMATES OF 2-PHENYLHYDRAZINO-2-IMIDAZOLINES

Knut Zellerhoff, Wuppertal-Elberfeld; Siegismund Schutz, Metzkausen, and Wilhelm Stendel, Wuppertal-Elberfeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 19, 1971, Ser. No. 173,290

Claims priority, application Germany, Aug. 22, 1970, P 20 41 734.9

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **24 Claims**

Phenylhydrazino-2-imidazoline derivatives bearing a carbalkoxy, carbocycloalkoxy or carbaryloxy group in the N^1-position are acaricidal agents. The compounds, of which 2-(N^1-carbethoxy-N^2-phenylhydrazino)-2-imidazoline is a typical embodiment, are prepared by treating the appropriate phenylhydrazino-2-imidazoline with an alkyl, aryl or cycloalkyl haloformate.

3,755,352

1-(4′-METHOXYSULPHONYL-PHENYL)-3-(4″-CHLOROPHENYL)-PYRAZOLINE

Siegfried Rosenberger, Riehen; Eduard Troxler, Basel, and Heinrich Hausermann, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 691,209, Dec. 18, 1967, Pat. No. 3,639,419. This application Nov. 30, 1971, Ser. No. 203,416

Claims priority, application Switzerland, Dec. 23, 1966, 18479/66

Int. Cl. C07d *49/10*

U.S. Cl. 260—310 D **1 Claim**

Novel 1-(4′-methoxysulphonyl-phenyl)-3-(4″-chlorophenyl)pyrazoline is described which has unexpectedly a very good affinity to cellulose ester fibers and optically brighten these fibers in pure white, free from undesirable greenish or greenish-blue hues even when applied in higher concentrations; compositions containing this novel compound as well as other substances, especially detergents, are also described; and a process for optically brightening cellulose ester and particularly cellulose acetate fibers is also disclosed.

3,755,353

BASIC DYES OF THE NAPHTHOLACTAM SERIES

Hans Baumann, Ludwigshafen, and Andreas Einwiller, Mannheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed July 8, 1971, Ser. No. 160,908

Int. Cl. C07d *27/72*

U.S. Cl. 260—326.3 **4 Claims**

Basic dyes of the naphtholactam series derived from an N-alkoxycarbonylethyl naphtholactam and an N-substituted aniline. They dye anionically modified textile material such as polyesters or acrylonitrile polymers blue shades.

3,755,354

AMIDE ACID AND IMIDO-SUBSTITUTED ORGANOSILANES

Fred F. Holub, and Milton L. Evans, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 821,869, May 5, 1969, Pat. No. 3,576,031. This application Dec. 15, 1970, Ser. No. 98,463

Int. Cl. C07d *27/18, 27/52*

U.S. Cl. 260—326 E **7 Claims**

Organosilanes are provided having at least one chemically-combined aliphatically unsaturated imido organic radical, such as a maleimido-substituted organosilane and a method for making these materials. For example, reaction can be effected between an aliphatically unsaturated dicarboxylic acid anhydride and an aminoorganoalkoxysilane. In certain instances, amido acid precursors of such unsaturated imido-substituted organosilanes also can be made. The aliphatically unsaturated imido-substituted organosilanes of the present invention can be employed to impart improved surface characteristics to cellulosic substrates and to make aliphatically unsaturated imido-substituted organopolysiloxanes.

3,755,355

PROCESS OF MANUFACTURING N-MERCAPTOMETHYLPHTHALIMIDE

Jules Kalbfeld, 2751 Wright Ave., Pinole, Calif.

Continuation-in-part of Ser. No. 868,627, Oct. 22, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,375

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 S **4 Claims**

A process of manufacturing N-mercaptomethylphthalimide is described herein. The process involves first forming a solution of sodium bisulfide in situ by reacting a sodium compound with hydrogen sulfide in the presence of a solvent. Then, a solution is formed consisting of N-halomethylphthalimide and tetrahydrofuran which is reacted with the sodium bisulfide solution to form N-mercaptomethylphthalimide.

3,755,356

SUBSTITUTED CROTONIC AMIDE γ-LACTAMS

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 860,086, Sept. 22, 1969, which is a continuation-in-part of application Ser. No. 874,678, Nov. 6, 1969, now Patent No. 3,631,080. This application June 14, 1971, Ser. No. 153,074

Int. Cl. C07d 27/08

U.S. Cl. 260—326.5 FL 12 Claims

Methods of employing and compositions comprising alkylated lactams for the control of insects.

3,755,357

2,3 - DIHYDRO - 5-TRIFLUOROMETHYL-1H-DIBENZO[2,3:6,7]THIEPINO[4,5-c]PYRROLES AS CNS-DEPRESSANTS

Walter Schindler, deceased, by Hans Blattner and Leonard Gysin, legal representatives, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 19, 1971, Ser. No. 145,022

Claims priority, application Switzerland, May 26, 1970, 7,798/70

The portion of the term of the patent subsequent to Jan. 18, 1989, has been disclaimed

Int. Cl. C07d 27/36

U.S. Cl. 260—326.9 13 Claims

Compounds of the class 2,3-dihydro-5-(trifluoromethyl)-1H-dibenzo[2,3:6,7]thiepino[4,5-c]pyrrole and its 2-alkyl-derivatives and pharmaceutically acceptable acid addition salts have a depressant effect on the central nervous system, they can be prepared from 10,11-bis-(bromomethyl)-2-(trifluoromethyl) - dibenzo[b,f]thiepin and a primary amine; the compounds are active ingredients of pharmaceutical compositions.

3,755,358

2-[N-(PHTHALIMIDOACETYL)-N-(POLYFLUOROLOWERALKYL)]AMINOBENZOPHENONES

John G. Topliss, West Caldwell, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of application Ser. No. 811,637, Mar. 28, 1969, now Patent No. 3,641,147, which is a continuation-in-part of application Ser. No. 703,245, Feb. 6, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 650,581, July 3, 1967, now Patent No. 3,429,874, which is a continuation-in-part of application Ser. No. 603,737, Dec. 22, 1966, which in turn is a continuation-in-part of application Ser. No. 520,658, Jan. 14, 1966, both now abandoned. This application May 10, 1971, Ser. No. 142,051

Int. Cl. C07d 27/52

U.S. Cl. 260—326 N 5 Claims

This invention relates to novel chemical composition of matter useful as intermediates in the preparation of 2-oxo - 1,3 - dihydro - 2H - 1,4 - benzodiazepines, and the 4-N-oxides thereof, having a polyfluoroloweralkyl radical attached at the 1-position thereof and to the methods for making and using such novel chemical intermediates.

3,755,359

ANTI-INFLAMMATORY SALICYLIC ACID DERIVATIVES

Gordon L. Walford, Tsung-Ying Shen, and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application June 25, 1969, Ser. No. 836,622, now Patent No. 3,682,968, dated Aug. 8, 1972. Divided and this application Nov. 1, 1971, Ser. No. 194,594

Int. Cl. C07d 27/26

U.S. Cl. 260—326.3 1 Claim

Salicylic acid derivatives and their non-toxic pharmaceutically acceptable salts, esters and amides are claimed. Also encompassed is the treatment of inflammation with said derivatives.

3,755,360

2,3,4,5-TETRAHYDRO-7H-[1,3]DIAZEPINO-[2,1-a]ISOINDOLES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Mar. 23, 1967, Ser. No. 625,296

Int. Cl. C07d 57/02

U.S. Cl. 260—326.5 B 7 Claims

The compounds are of the class of 7-hydroxy-7-aryl-2,3,4,5-tetrahydro - 7H - [1,3]diazepino[2,1-a]isoindoles which are useful as anorectic agents and are prepared by isomerization of the corresponding 11b-aryl-1,2,3,4,5,11b-hexahydro-7H-[1,3]diazepino[2,1-a]isoindol-7-ones.

3,755,361

POLYHYDROPHENANTHRENE DERIVATIVES

Philip E. Shaw, Winter Haven, Fla., and Sol J. Daum, Albany, and Robert L. Clarke, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 585,762, Oct. 11, 1966. This application Nov. 25, 1969, Ser. No. 879,920

Int. Cl. A61k 27/00; C07d 71/00

U.S. Cl. 260—327 M 9 Claims

Alkyl polyhydro-2-phenanthrylideneacetates are prepared by interacting the corresponding 2-oxopolyhydrophenanthrenes with a tri-lower-alkyl α-phosphono-lower-alkanoate. Said alkyl polyhydro-2-phenanthrylideneacetates are hydrolyzed to the free acid, and then reesterified via the acid chloride with a tertiary-amino-lower-alkanol to give basic esters having cardiotonic activity.

3,755,362

PROCESS OF MAKING 2,3-DIHYDRO-P-DITHIINS AND THEIR SULFOXIDES AND SULFONES

Friedrich Asinger, Aachen, and Paul Scherberich, Neu Isenburg, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Nov. 17, 1970, Ser. No. 97,402

Claims priority, application Germany, Nov. 18, 1969, P 19 57 860.0

Int. Cl. C07d 73/00

U.S. Cl. 260—327 P 10 Claims

2,3-dihydro-p-dithiins are made by reacting an α-mercaptooxo compound or a dimer thereof with an equimolar amount of a thiirane in the presence of an inert organic solvent and in the presence of a base at a temperature between about 0 and 100° C., thereby forming the addition product of the α-mercaptooxo compound and the thiirane; and then effecting the cyclization of the said addition product. The thus-formed 2,3-dihydro-p-dithiin may then be oxidized to the sulfoxide or sulfone.

The products are useful as antioxidants in synthetic materials and can be made at higher yields and at higher purity by the above process.

3,755,363

CYCLIC CYANODITHIOIMIDOCARBONATE AND ITS PREPARATION

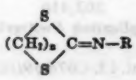
Richard V. Timmons, Marysville and Lawrence S. Wittenbrook, Columbus, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

No Drawing. Filed Sept. 12, 1966, Ser. No. 578,514

Int. Cl. C07c 69/00

U.S. Cl. 260—327 M 2 Claims

Compounds of the formula



and methods of making and using them.

3,755,364

3-(N-CARBAMYLOXIMINO)-SATURATED THIOHETEROCYCLIC COMPOUNDS

Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 28,097, Apr. 13, 1970, which is a continuation-in-part of application Ser. No. 839,641, July 7, 1969, now abandoned. This application Feb. 2, 1972, Ser. No. 223,004

Int. Cl. C07d *63/04, 65/04*

U.S. Cl. 260—327 TH 12 Claims

Pesticidally active 3-(carbamyl- and N-substituted-carbamyloximino)-saturated heterocyclic compounds have been prepared. These compounds are useful in combating undesirable pests such as insects, acarids, nematodes, viruses, and the like.

3,755,365

HETEROBICYCLIC COMPOUNDS AND PROCESS FOR THEIR PREPARATION

Allison F. Fentiman, Jr., Columbus, Ohio, and Jean P. Vité, Beaumont, Tex., assignors to Boyce Thompson Institute for Plant Research, Inc.

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,494

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 2 Claims

New biologically active oxygen-containing heterobicyclic compounds and a method for their preparation. The compounds disclosed herein are substituted 6,8-dioxabicyclo[3.2.1]octanes wherein the 5 position carbon is substituted with a lower alkyl and the 1 and 7 position carbons are substituted with a member of the group consisting of hydrogen and lower alkyl radicals. A simple, one-step process for synthesizing these compounds comprising reacting a lower alkyl vinyl ketone with an allyl alcohol is disclosed.

3,755,366

PIPERONYL CARBAMATE HERBICIDES

Ryuzo Nishiyama, Kyoto, and Ryohei Takahashi, Takahiro Haga, and Tadaaki Toki, Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

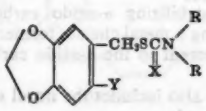
No Drawing. Filed Feb. 22, 1971, Ser. No. 117,699

Claims priority, application Japan, Feb. 23, 1970, 45/14,833

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 11 Claims

Herbicides, having the general formula:



wherein X represents oxygen or sulfur; Y represents hydrogen or halogen and R represents a lower alkyl group, have been prepared and have been found to possess remarkable selective growth controlling properties.

3,755,367

SUBSTITUTED 1,4-BENZODIOXANES

Peter Nicholl Green, Liverpool, and Maurice Shapero, Edgeware, England, assignors to Ward Blenkinsop & Company Limited, Wembley, England

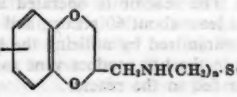
No Drawing. Filed Sept. 24, 1971, Ser. No. 183,684

Claims priority, application Great Britain, Sept. 24, 1970, 45,671/70

Int. Cl. C07d *15/12*

U.S. Cl. 260—340.3 6 Claims

The invention provides basically 2-substituted 1,4-benzodioxanes having the general formula:



(I)

where

R is a hydrogen atom, a halogen atom having an atomic number not exceeding 35 or an alkyl or alkoxy group having from one to six carbon atoms,

R^1 is a saturated aliphatic group having one to eight carbon atoms, and

n is an integer from 2 to 6

and acid addition salts of such benzodioxanes. The compounds exhibit an unusual combination of tranquilising, taming and aggression-building activity when administered to rats.

3,755,368

FORMYLATION OF CARBOXYLIC COMPOUNDS WITH CARBON MONOXIDE

John Huber, Hackensack, N.J., assignor to S. B. Penick & Company, a unit of CPC International, Inc.

No Drawing. Filed Mar. 1, 1971, Ser. No. 120,039

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 9 Claims

A method for the preparation of 2-formyl esters. The method involves the reaction of a carboxylic compound having at least two hydrogen atoms on the carbon atom alpha to the carboxyl group with carbon monoxide, preferably under pressure. The method is particularly applicable to the preparation of 2-formyl-4-ethylenedioxy velerates. These compounds are useful as intermediates in the synthesis of valuable insecticides, e.g., 5-benzyl-3-furylmethyl chrysanthemate.

3,755,369

CERTAIN PEROXY-CONTAINING 2-OXO-TETRAHYDROFURANS

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Original application Sept. 5, 1968, Ser. No. 757,758, now Patent No. 3,647,822. Divided and this application May 25, 1971, Ser. No. 146,836

Int. Cl. C07d *5/34*

U.S. Cl. 260—343.3 9 Claims

A difunctional hydroperoxide is reacted with either a γ-ketoacylhalide or a 2-aroylbenzoylhalide, in the presence of a basic reagent in an organic solvent like p-dioxane at a temperature ranging from about 10° C. to about 50° C. at a mole ratio from about 1:2 to about 1:10. The preferred temperature is between about 25° C. and 35° C. and the preferred mole ratio is from about 1:2 to about 1:2.5.

Novel organic peresters are produced which have been found to be excellent initiators in polymerization reactions, such as the polymerization of styrene, vinyl esters, alkyl methacrylates, and the like. These novel peresters have also been found to provide excellent cross-linking agents for polyethylene, polypropylene, and the like.

3,755,370

2-SUBSTITUTED-4-PROPARGYLOXYMETHYL-γ-BUTYROLACTONES

Claude P. Fauran, Guy M. Raynaud and Colette A. Douzon, Paris and Janine M. Thomas, Neuilly-sur-Seine, France, assignors to Delalande S.A., Courbevoie, France

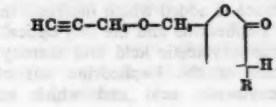
No Drawing. Filed Aug. 22, 1969, Ser. No. 852,476

Claims priority, application Great Britain, Sept. 17, 1968, 44,027

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.6 4 Claims

A compound of the formula:



in which R is hydrogen, alkyl having 1 to 10 carbon atoms or aryl aliphatic in which the aryl can be substituted by one or more halogens, one or more alkoxy, aliphatic having 1 to 4 carbon atoms or trifluoromethyl. The compound is formed by saponifying and then decarboxylating the corresponding 2-ethoxycarbonyl derivative. The compounds possess anxiolytic, anti-depressive, analgesic and respiratory stimulating properties.

3,755,371

PROCESS FOR THE PRODUCTION OF LACTONES

Nazar S. Aprahamian, West Nyack, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 15, 1970, Ser. No. 55,217
Int. Cl. C07d *7/06, 9/00*
U.S. Cl. 260—343 23 Claims

A liquid phase co-oxidation process for the production of lactones comprising admixing, in a nitrile medium, a cyclic ketone, an aldehyde, and an oxygen containing gas; maintaining a ratio of preferably about 6 to about 27 mols of ketone per mol of aldehyde throughout the reaction; and maintaining said mixture at a temperature of preferably about 60° C. to about 110° C.

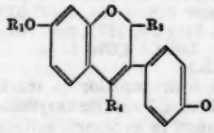
3,755,372

ISOFLAVANOID ETHERS

Klaus Irmscher, Josef Kramer, and Hans-Gunther Kraft, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Feb. 11, 1971, Ser. No. 114,706
Claims priority, application Germany, Feb. 13, 1970, P 20 06 505.8
Int. Cl. C07d *7/26*
U.S. Cl. 260—345.2 13 Claims

Isoflavanoid ethers of the formula



wherein R_1 and R_2, which can be identical or different, are isopropyl, tert.-butyl, cyclopentyl, or cyclohexyl, R_3 and R_4, which can be identical or different, are alkyl of 1–4 carbon atoms, possess valuable pharmacological activity, including estrogenic, gonadotropin-inhibiting and anti-fertility activity. They are useful as feed supplements for cattle and poultry to promote growth and weight gain.

3,755,373

SALTS OF 1-EPHEDRINE AND A D (−)-1-ALPHA-AZIDOFLUOROPHENYLACETIC ACID

Thore Oskar Verner Rydh, Sodertalje, Sweden, assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

No Drawing. Filed May 28, 1971, Ser. No. 148,181
Claims priority, application Sweden, June 2, 1970, 7,612/70
Int. Cl. C07c *117/00*
U.S. Cl. 260—349 3 Claims

The process comprises reacting the DL-azidofluorophenylacetic acid in the form of a free acid or a salt thereof and 1-ephedrine or a salt thereof in a liquid reaction medium, in which process the 1-ephedrine is added in an amount of at most 0.6 mole/mole of DL-α-azidofluorophenylacetic acid, into the liquid reaction medium. A substance is added which increases the solubility of the salt of 1-ephedrine and the two optical isomers of α - azidofluorophenylacetic acid and thereby suppresses the precipitation of the 1-ephedrine salt of L(+)-α-azidofluorophenylacetic acid ,and which substance is selected from the group consisting of lower alkanols, ethers, lower esters, polyalcohols or impurities occurring in azidofluorophenylacetic acid of poor quality. Thereafter, the D(−) - α - azidofluorophenylacetic acid is selectively crystallized by the addition of seed crystals of this D(−)-α-azidofluorophenylacetic acid 1-ephedrine salt.

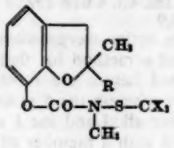
3,755,374

SULPHENYLATED DIHYDROBENZOFURANYL-N-METHYLCARBAMATES

Gerhard Zumach, Cologne, Engelbert Kuhle, Bergisch-Gladbach, and Ingeborg Hammann, and Wolfgang Behrenz, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,226
Claims priority, application Germany, Sept. 15, 1970, P 20 45 441.5
Int. Cl. C07d *5/36*
U.S. Cl. 260—346.2 R 8 Claims

Sulphenylated dihydrobenzofuranyl - N - methylcarbamates of the general formula



(I)

in which

R is hydrogen or methyl and
X is fluorine, chlorine or bromine,

which possess insecticidal and acaricidal properties.

3,755,375

PROCESS FOR STABILIZING α-AZIDO CARBONYL COMPOUNDS

Hans Schubel, Troisdorf, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Apr. 7, 1969, Ser. No. 815,516
Claims priority, application Germany, Apr. 10, 1968, P 17 68 176.4
Int. Cl. C07d *109/00*
U.S. Cl. 260—349 12 Claims

Process for stabilizing α-azido carbonyl compounds comprising adding a metal chelate former in an amount of 0.01 to 5 wt. percent to the α-azido carbonyl compound to be stabilized.

The invention also includes the novel stabilized α-axido carbonyl compounds.

3,755,376

METHOD OF PRODUCING PHTHALIC ANHYDRIDE

Robert B. Egbert, Stamford, Conn., assignor to The Badger Company, Inc., Cambridge, Mass.

Original application Aug. 15, 1967, Ser. No. 660,739, now Patent No. 3,535,345. Divided and this application Dec. 8, 1969, Ser. No. 879,974
Int. Cl. C07c
U.S. Cl. 260—346.4 1 Claim

A process for production of phthalic anhydride by vapor phase oxidation of o-xylene with air wherein at least 80–90% of the product is recovered from the reactor effluent in liquid condensers and the remaining product is recovered by wet process quenching and solids filtration. The reactor is operated at a relatively high pressure, at least about 60 p.s.i.g., and overall power consumption is minimized by utilizing the heat and compression energy in the hot product vent gas to compress and heat the air fed to the reactor.

3,755,377

TETRAHYDROFURAN-2,3,4,5-TETRACARBOXYLIC ACID DIANHYDRIDE

Karl Peterlein and Heinz Rempfer, Gladbeck, Germany, assignors to Gelsenberg Aktiengesellschaft, Gelsenkirchen-Horst, Germany

Filed Dec. 17, 1968, Ser. No. 796,631
Claims priority, application Germany, Dec. 22, 1967, P 16 43 407.4
The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed
Int. Cl. C07d *5/26*
U.S. Cl. 260—346.8 1 Claim

Tetrahydrofuran-2,3,4,5-tetracarboxylic acid dianhydride. The compound is useful for the production of polyesters, polyamides and polyimides, and as a curing agent for epoxy resins.

3,755,378

PREPARATION OF 3-FUROATE ESTERS

Bernard Beau Brown, Westfield and John Swidinsky, Newark, N.J., assignors to CPC International Inc.

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,216
Int. Cl. C07d *5/16*
U.S. Cl. 260—347.5 13 Claims

A method for the preparation of 3-furoate esters including the cyclization of levulinic esters in which the keto group is blocked by a ketal or acetal group and in which a 2-formyl group has been reacted with aqueous sodium bisulfite. The furoate esters are useful as intermediates in the preparation of insecticidal materials.

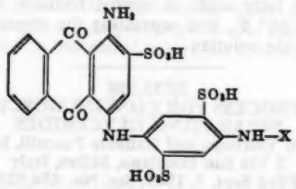
3,755,379

ANTHRAQUINONE COMPOUNDS

Henri Riat, Arlesheim, and Arthur Buehler, Rheinfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,939
Claims priority, application Switzerland, Jan. 28, 1969, 1,293/69
Int. Cl. C09b *1/34*
U.S. Cl. 260—372 1 Claim

Compounds of the formula



wherein X denotes a hydrogen atom or an acyl residue.

3,755,380

METHOD FOR SEALING HIGH PRESSURE FUEL TANKS AND SEALING COMPOSITION THEREFOR

James E. Matherly, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,158
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 16 Claims

High pressure fuel tanks are sealed by injecting under pressure into sealant grooves an admixture of an inert permanently plastic non-curing sealing composition with organic peroxide where the amount of organic peroxide is sufficient to alter the flowability of the sealing composition but insufficient to cure the sealing composition to a non-reinjectable material after the organic peroxide has been activated and thereafter heating the fuel tank above the activation temperature of the organic peroxide. A mixture of poly-3,3,3-trifluoropropylmethylsiloxane fluid, poly-3,3,3-trifluoropropylmethylsiloxane gum, an extending filler, a polytetrafluoroethylene resin and a small amount of an organic peroxide is a particular inert permanently plastic non-curing sealing composition admixture.

3,755,381

6,7 - DIHYDRO - 17 - HYDROXY-3-OXO-3'H-CYCLOPROPA[6,7] - 17α - PREGNA - 4,6-DIENE-21-CARBOXYLIC ACIDS AND SALTS, AND PHARMACEUTICAL PREPARATIONS THEREOF

Leland J. Chinn, Morton Grove, and John W. Cusic, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 47,914, June 19, 1970. This application Nov. 22, 1971, Ser. No. 201,163
Int. Cl. C07c *173/00*
U.S. Cl. 260—397.1 3 Claims

Preparations of the captioned compounds and their unexpectedly potent and selective diuretic activity are disclosed.

3,755,382

SYNTHESIS OF 17α-(TRIMETHYLSILYLETHYNYL)ESTRADIOL

David F. Crowe, San Jose, and Masato Tanabe, Palo Alto, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed June 1, 1972, Ser. No. 258,505
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 25 Claims

Disclosed as new compounds having estrogenic and antifertility activity are derivatives of estradiol which are substituted in the 17α position by hydrocarbylsilylvinyl or hydrocarbylsilylethynyl groups, representative new compounds being 17α(triethylsilylethynyl)estradiol, 17α-(cis - 2' - triethylsilylvinyl)estradiol, 17α(trans-2'-triethylsilylvinyl)estradiol and 17α(1'-tri-n-propysilylvinyl)estradiol.

3,755,383

SULFAMYL-ANTHRANILIC ACIDS

Peter Warner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,413
Claims priority, application Great Britain, Apr. 29, 1969, 21,890/69
Int. Cl. C07c *143/80*
U.S. Cl. 260—397.7 7 Claims

This invention relates to new 4-substituted 5-sulfamylanthranilic acids, and salts and esters thereof, having a pronounced diuretic and saluretic effect; to methods of producing the said compounds; and to pharmaceutical compositions in dosage unit form containing the said compounds as active ingredients.

3,755,384

TRIALKYLSILYL ETHERS OF 17α-ALKYNYL-ESTRA - 1,3,5(10) - TRIENE-3,17β-DIOLS AND 11β-ALKYL DERIVATIVES THEREOF

Edward A. Brown, Wilmette, and Ivar Laos, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 7, 1971, Ser. No. 132,152
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 6 Claims

The reaction of 17α-alkynylestra-1,3,5(10)-triene-3,17β-diols, optionally alkyated at te 11-position, with a trialkylsilyl chloride affords the corresponding trialkylsilyl ethers, which are useful pharmacological agents as evidenced by their potent and long-acting estrogenic and anti-fertility properties.

3,755,385

PREPARATION OF FATTY ACID ESTER MIXTURES ENRICHED IN UNSATURATES

James P. Hutchins, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,753
Int. Cl. C07c *67/06*
U.S. Cl. 260—410.9 R 10 Claims

A process for preparing fatty ester mixtures enriched in unsaturates from natural fats and oils comprising transesterifying said fats and oils with a lower alcohol and selectively extracting the unsaturated fatty acid esters with a two-phase solvent system comprising a hydrocarbon and gamma-butyrolactone (γ-butyrolactone). The esters are useful in foods and paints.

3,755,386

PROCESS FOR THE CATALYTIC MIXED OLIGOMERIZATION OF 1,3-DIOLEFINS WITH α-UNSATURATED ORGANIC COMPOUNDS

Gunther Wilke, Mulheim (Ruhr), and Helmut Bonnemann, Essen (Ruhr), Germany, assignors to Studiengesellschaft Kohle mbH., Mulheim (Ruhr), Germany

No Drawing. Filed Feb. 5, 1971, Ser. No. 113,100
Claims priority, application Germany, Feb. 7, 1970, P 20 05 733.4
Int. Cl. C07c *67/00, 3/10, 69/52*
U.S. Cl. 260—410.9 R 5 Claims

Mixed oligomers are prepared by reacting 1,3-dienes with ethylene or ethylenically unsaturated compounds in the presence of a cycloolefin-cobalt complex catalyst.

3,755,387

VAPOR PHASE TRANSVINYLATION PROCESS

Arnold E. Young, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 5, 1969, Ser. No. 847,740
Int. Cl. C07c *67/02*; C11c *3/10*
U.S. Cl. 260—410.9 N 9 Claims

A transvinylation process which comprises reacting by contacting, in the presence of a noble metal salt catalyst and in the vapor phase at reaction temperature, and acid and a vinyl ester.

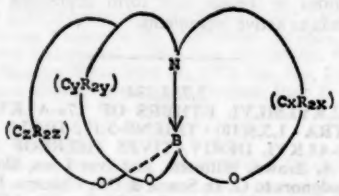
3,755,388

CAGED BORON-NITROGEN COMPOUNDS CONTAINING ESTER SUBSTITUTION

Jerome H. Ludwig, Cleveland, and Kenneth J. Witsken, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Original application Feb. 23, 1968, Ser. No. 707,809. Divided and this application May 18, 1971, Ser. No. 144,643
Int. Cl. C07c *69/00*
U.S. Cl. 260—404 6 Claims

Caged boron-nitrogen compounds having the formula:



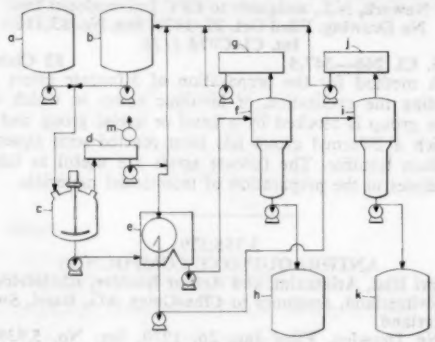
Certain of the compounds of this invention contain at least one ring substituent whereas with others at least two of the rings of the compounds are substituted, with at least one of the rings being substituted with a hydroxyalkyl, aminoalkyl, arylalkyl, aryl, ester, amido or ether radical, and at least one of the remaining rings being substituted with one of these radicals or an alkyl radical, but one ring need be substituted when the substituent is a higher C_8–C_{22} alkyl radical, a hydroxyl group, a higher C_8–C_{22} ether or ester, or an alkyl higher (C_8–C_{22}) ether or ester. Exemplary of these compounds are 3,7,10-trihydroxymethyl-2, 8,9-trioxa - 5 - aza - 1 - boratricyclo[3.3.3.0]undecane; 3-methyl-7,10-diphenyl-2,8,9-trioxa-5-aza - 1 - boratricyclo [3.3.3.0]undecane; and 3-hydroxymethyl-7,10-dimethyl-2, 8,9-trioxa-5-aza-1-boratricyclo[3.3.3.0]undecane stearate. The compounds are useful as antistatic agents in natural and synthetic, polymeric fibers and films, and as color improving agents for fatty acid distillations.

3,755,389

METHOD OF SEPARATING FATTY ACIDS

Ted L. Blaney, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 24, 1970, Ser. No. 101,230
Int. Cl. C11c *1/08*
U.S. Cl. 260—419 6 Claims



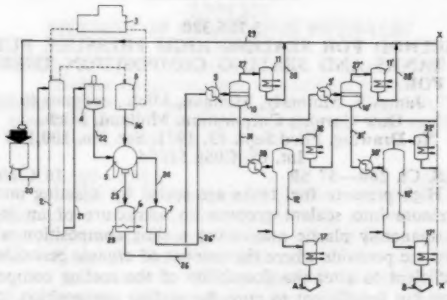
A process for separating saturated fatty acids (predominantly palmitic and stearic) from unsaturated fatty acids (predominantly oleic) comprising the steps of dissolving the fatty acids in methyl formate, cooling the solution to 30° F., and separating the crystallized fatty acids from the solution.

3,755,390

PROCESS FOR CONTINUOUSLY SEPARATING GLYCERIDES

Alberto Viarengo and Raffaele Pasculli, both of 2 Via San Damiano, Milan, Italy

Filed Sept. 3, 1969, Ser. No. 854,925
Int. Cl. C11b *7/00*
U.S. Cl. 260—428.5 2 Claims



The invention describes a process for continuously separating glycerides by a low temperature fractionation of a glycerides-solvent mixture, by continuously gravity

feeding such mixture within a cooling environment. The process comprises providing a highly diluted mixture and localized stirring thereof for promoting heat-exchange in horizontal planes therein, while subjecting it to cooling, and filtering and separating crystallized glycerides from the solvent, and an apparatus including said environment and feeding, cooling, stirring and separating means therefor.

3,755,391

PROCESS FOR THE PRODUCTION OF MANGANIC CARBOXYLATES

Jean-Noel Marie Bertrand, Tervueren, and Joseph Marie Vaerman, Brussels, Belgium, assignors to Labofina S.A., Brussels, Belgium

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,213
Claims priority, application Belgium, Jan. 4, 1971, 98,261
Int. Cl. C07f *13/00*
U.S. Cl. 260—429 R **9 Claims**

A process for the production of the manganic salt of an aliphatic carboxylic acid, which comprises treating in liquid phase by an oxygen containing gas, a manganous compound from the group consisting of manganous salt of said carboxylic acid, a manganous salt of a weaker than said carboxylic acid, manganous oxide and manganous hydroxide, in the presence of a ketone having the formula R—CO—R_1, wherein R is an aliphatic or aromatic radical and R_1 is an aliphatic radical or forms with R a cycloalkane radical, and in the presence of said carboxylic acid of which said manganic salt is a derivative, at a temperature from 50 to 130° C.

3,755,392

DIHYDROCARBYL (PHENOLATO) TIN CARBOXYLATES

Toshio Seki, Osaka, Japan, assignor to Nitto Kasei Co., Ltd., Osaka, Japan

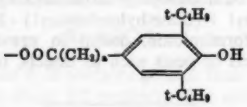
No Drawing. Original application May 9, 1967, Ser. No. 637,057, now Patent No. 3,632,551. Divided and this application Mar. 3, 1971, Ser. No. 120,685
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **6 Claims**

This invention relates to the method for stabilizing synthetic resins against the deteriorating effects of heat and light and comprises incorporating into said resin an inhibiting amount of a compound having the following formula

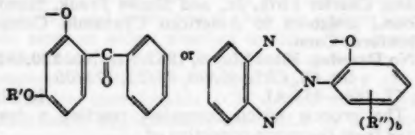
(I)

wherein:

(1) R is selected from the group consisting of alkyl of from 1 to 8 carbon atoms, aryl, and benzyl,
(2) X is a residue of the formula



in which *a* is an integer of from 0 to 2, inclusive, and,
(3) Y is a residue of the formula



in which R′ and R″ are alkyl of from 1 to 8 carbon atoms, and *b* is an integer of from 0 to 2, inclusive.

3,755,393

RECOVERY OF RHODIUM FIXED TO BASIC ION EXCHANGERS IN THE FORM OF RHODIUM CARBONYLATE

Wilhelm Kniese, Limburgerhof, Hans Juergen Nienburg, Ludwigshafen, Juergen Plueckhan, Beindersheim, Walter Himmele, Walldorf, and Werner Aquila, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,195
Claims priority, application Germany, Sept. 15, 1970, P 20 45 416.4
Int. Cl. C07f *15/00*; C22b *3/00*
U.S. Cl. 260—429 R **7 Claims**

Process for the recovery of rhodium fixed to basic ion exchangers in the form of rhodium carbonylate with simultaneous regeneration of the basic ion exchangers, comprising treating the basic ion exchangers laden with rhodium carbonylate with a mixture of lower alkanols, water and water-soluble aliphatic amines in the presence of molecular oxygen.

3,755,394

ALKYLENEBISDITHIOCARBAMATE COMPLEX COMPOUNDS

Robert L. Noveroske, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 39,899, May 22, 1970. This application Apr. 29, 1971, Ser. No. 138,751
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **8 Claims**

Novel complexes of ethylenediamine or polyethylenepolyamines with zinc containing alkylenebisdithiocarbamates are prepared by mixing together a water-soluble alkylenebisdithiocarbamate, water-soluble salts of zinc or zinc and one or more additional metal such as, for example, manganese or iron and ethylenediamine and/or one or more polyethylenepolyamines. The complex compounds are stable and can be used to regulate the growth of plants. They are useful as antifungal agents for the control of such fungi as apple scab fungus, rice blast, grape downy mildew and late blight organisms. They also are useful for promoting the growth of higher plants such as grapes, potatoes and the like.

3,755,395

ACETYLENIC DERIVATIVES OF ZINC

Georges Bakassian, and Marcel Lefort, Caluire, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,281
Claims priority, application France, Sept. 16, 1970 7033557
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **6 Claims**

Solutions of organo-zinc compounds of the formulae:

X—Zn—C≡CH and X—Zn—C≡C—Zn—X

where X is halogen, made by reaction of an alkyl zinc halide with acetylene, are used for making acetylenic organo-silicon compounds by reaction with compounds containing silicon-chlorine bonds.

3,755,396

COBALT DICYCLOHEXYLDITHIOPHOSPHINATE AND STABILIZATION OF POLYOLEFINS THEREWITH

Houston George Brooks, Jr., Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,877
Int. Cl. C07f *15/06*; C08f *45/62*
U.S. Cl. 260—439 R **1 Claim**

A new compound, cobalt dicyclohexyldithiophosphinate, is disclosed. It is useful for stabilizing polyolefins against deterioration by light and heat.

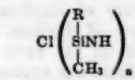
3,755,397

SILYLATING AGENT

Charles A. Roth, Saginaw, and John L. Speier, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed June 1, 1971, Ser. No. 148,901
Int. Cl. C07f 7/10
U.S. Cl. 260—448.2 N 2 Claims

Silazanes of the formula $(RCH_3SiNH)_x$ and chlorosilanes of the formula $R(CH_3)SiCl_2$ are mixed at a temperature of below 50° C. in the absence of a catalyst such as Lewis acid, to form chlorosilazanes in which the major product is of the formula



The product is especially suitable for silylating organic compounds such as drugs containing one or more functional groups of the type XH, where X is oxygen, sulfur or nitrogen.

3,755,398

SILOXAZANES COMPOSITIONS AND PROCESSES THEREOF

Richard Paul Bush, Penarth, Glamorgan, Wales, assignor to Midland Silicones Limited, Berkshire, England

No Drawing. Original application Mar. 24, 1969, Ser. No. 809,950, now Patent No. 3,641,089. Divided and this application Aug. 2, 1971, Ser. No. 168,345
Int. Cl. C07f 7/02
U.S. Cl. 260—448.2 N 5 Claims

This disclosure relates to various cyclic siloxazane compounds and to processes thereof. These cyclic siloxazane compounds are prepared by reacting certain lithium-containing siloxazanes with organosilicon materials containing at least one silicon bonded halogen atom per molecule.

3,755,399

METHOD FOR PREPARING ORGANOPOLYSILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS

Siegfried Nitzsche, Ewald Pirson, and Peter Huber, Burghausen, Germany, assignors to Wacker Chemie GmbH, Munich, Germany

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,155
Claims priority, application Germany, Sept. 14, 1970, P 20 45 360.5
Int. Cl. C07f 7/18
U.S. Cl. 260—448.8 R 23 Claims

A method for preparing organopolysiloxane-polyoxyalkylene block copolymers in which the polyoxyalkylene blocks are bonded to the organopolysiloxane blocks by an Si—O— bond, which comprises reacting in a first stage an organopolysiloxane having silicon-bonded hydroxyl groups with the chlorine atom or atoms of a polyoxyalkylene compound and thereafter reacting the silicon-bonded hydrogen atoms of the reaction product thus formed with the unreacted silicon-bonded hydroxyl groups from the first stage. The block copolymer thus formed are useful as additives to paints, foam stabilizers for polyurethane foams, emulsifiers, lubricants and the like.

3,755,400

SYNTHESIS OF CYCLIC ALUMINUM COMPOUNDS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,517
Int. Cl. C07f 5/06
U.S. Cl. 260—448 A 14 Claims

Nonionic organoaluminum compounds possessing an aluminacyclopentene moiety are formed by mixing (a) alkali metal 1,1-dihydrocarbylaluminacyclopent-3-enide with (b) aluminum trihydrocarbyl or dihydrocarbyl aluminum hydride in proportions corresponding to at least about 1.3 moles of (b) per mole of (a) in the presence of a suitable Lewis base.

3,755,401

PROCESS FOR PREPARING POLYISOCYANATES WHICH INVOLVES SELECTIVE PRECIPITATION OF INORGANIC SALTS

Charles R. Vestal, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sept. 24, 1970, Ser. No. 75,014
Int. Cl. C07c 119/04
U.S. Cl. 260—453 P 9 Claims

Formation of undesired isocyanurates is avoided in preparation of diisocyanates by reaction of organic halide with metal cyanate in the presence of metal halide in aprotic solvent by the improvement of adding a selective solvent to precipitate the inorganic salts before the product mixture is heated sufficiently to initiate trimerization as the aprotic solvent is evaporated off.

3,755,402

ESTERS OF CYANIC ACID AND METHOD OF PREPARATION

Ernst Grigat, Cologne-Stammheim, and Rolf Putter, Dusseldorf, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Application Feb. 12, 1968, Ser. No. 704,948, now Patent No. 3,553,244, dated Jan. 5, 1971, which is a continuation of abandoned application Ser. No. 339,333, Jan. 22, 1964. Divided and this application June 16, 1970, Ser. No. 14,844
Claims priority, application Germany, Feb. 16, 1963, F 39,039; Apr. 3, 1963, F 39,393; Apr. 16, 1963, F 39,422; Aug. 7, 1963, F 40,440
Int. Cl. A01n 9/22; C07c 119/00, 119/02
U.S. Cl. 260—453 AR 16 Claims

Cyanic acid esters having the formula

$$R(O—C\equiv N)_x$$

in which R is an alkyl or cycloalkyl radical containing an electron-attracting substituent, an aryl radical, a substituted aryl radical free from the simultaneous presence of sterically hindered substituents in both ortho positions to the corresponding —O—C≡N group or a heterocyclic radical, and x is a whole number from 1 to 6. The esters can be hydrolyzed to the corresponding carbonates which are known compounds.

3,755,403

1-CARBAMOYL-N-HYDROXY FORMIMIDATES AND 1-CARBAMOYL-N-CARBAMOYLOXY FORMIMIDATES

Russell F. Bellina, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 15, 1970, Ser. No. 55,290
Int. Cl. C07c 119/16
U.S. Cl. 260—453 R 13 Claims

A class of 1-carbamoyl-N-carbamoyloxy formimidates, such as methyl 1-(dimethylcarbamoyl)-N-(methylcarbamoyloxy)-formimidate, useful in preventing the destructive effects of pests such as insects, ticks, mites and nematodes.

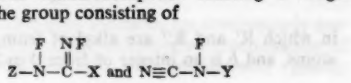
3,755,404

NOVEL NITROGEN-FLUORINE COMPOUNDS AND METHODS OF PREPARATION

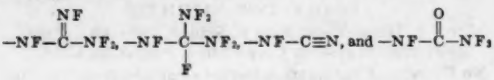
William Charles Firth, Jr., and Simon Frank, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 9, 1963, Ser. No. 280,492
Int. Cl. C07c 69/00, 87/22, 123/00
U.S. Cl. 260—453 AL 13 Claims

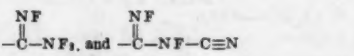
1. The process which comprises reacting a reagent selected from the group consisting of



wherein —X is selected from the group consisting of —F, $—NF_2$,

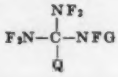


when Z— is F— and wherein —X is —NF—C≡N when Z— is N≡C— and wherein —Y is selected from the group consisting of —F,

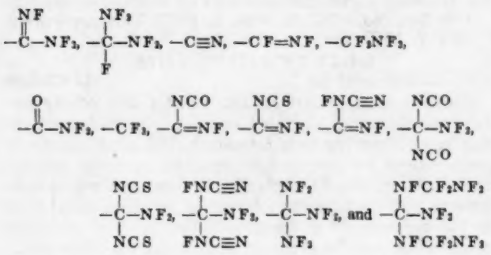


with an additive selected from the group consisting of HNCO, HNCS, and $H_2NC{\equiv}N$ to produce an adduct.

13. A compound having the structural formula



wherein Q is selected from the group consisting of —NCO, —NCS, —NFC≡N, $—NF_2$, —NHCF=NF, —NFCF=NF, $NFCF_2NF_2$, and $—NFCF_3$, and wherein G is selected from the group consisting of



3,755,405

TERTIARY POLYFLUOROALKYL HYPOCHLORITES AND PROCESS FOR THE PREPARATION THEREOF

Douglas E. Gould, Boonton, David E. Young, Denville, Lowell Ray Anderson, Parsippany, and William B. Fox, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1968, Ser. No. 772,037

Int. Cl. C07c *71/00*

U.S. Cl. 260—453 R **2 Claims**

Tertiary polyfluoroalkyl hypochlorites of the formula:

$$R—(OCl)_n$$

wherein *n* is 1 or 2, R contains at least four carbon atoms and is an open chain YZ-perfluoroalkyl group when *n* is 1, R is an open chain YZ-perfluoroalkylene group when *n* is 2, wherein Y and Z are substituents on the R moiety and are the same or different electronegative groups selected from F, FSO_2, FSO_3, NO_2, perfluoroalkyl, perfluorocycloalkyl and perfluoroaryl, with the proviso that the carbon atom or atoms attached to the —OCl group or groups are each bonded to three other carbon atoms; may be prepared by reacting corresponding tertiary alcohols with chlorine monofluoride (ClF). The novel tertiary polyfluoroalkyl hypochlorites are useful as polymerization initiators, as chlorinating agents, as bleaching agents and are valuable intermediates for the synthesis of other useful compounds.

3,755,406

ISOTHIOCYANO-DIPHENYLAMINES

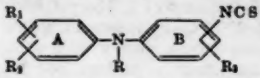
Paul Brenneisen, Basel, Jean-Jacques Gallay, Magden, and Alfred Margot, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 7, 1969, Ser. No. 839,653

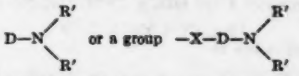
Int. Cl. C07c *161/04*

U.S. Cl. 260—454 **4 Claims**

Isothiocyano-diphenylamines of the formula



wherein the ortho positions, in rings A and B, relative to an —NH— bridge are free from isothiocyano substituents, R represents hydrogen, alkyl of at most 3 carbon atoms or alkenyl of at most 3 carbon atoms, R_1 and R_3 represent, independently of each other hydrogen, middle halogen, cyano, hydroxy, nitro, carboxy, trifluoromethyl, alkyl, alkenyl, alkoxy, alkenyloxy, alkylthio, alkenylthio, each of the latter six groups having at most 5 carbon atoms, alkanoylamino, alkanoyl, alkanoyloxy, alkoxycarbonyl, each of the four last-mentioned groups having at most 6 carbon atoms, dialkylamino having a total of at most 5 carbon atoms, a group



wherein D is alkylene of 2 or 3 carbon atoms, R′ represents alkyl of 1 to 3 carbon atoms, the sum of the carbon atoms of D and R′ not exceeding 6, and X represents oxygen or sulfur and R_2 represents hydrogen, halogen, nitro, isothiocyano or alkyl of at most 5 carbon atoms, and wherein an isothiocyano group must be in m- or p-position to any hydroxy or carboxy being a substituent of a benzene ring or to the —NR-bridge when R is hydrogen, and, when R, R_1 and R_3 are hydrogen atoms, the group —NCS at ring B is in m- or p-position and any isothiocyano group R_2 is in m-position, are disclosed as novel anthelmintic agents. Their production, their use in the control of helminths and compositions containing them are also disclosed.

3,755,407

SULFATION PROCESS FOR SECONDARY ALCOHOLS

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 10, 1967, Ser. No. 615,209

Int. Cl. C07c *141/04*

U.S. Cl. 260—459 **11 Claims**

Inhibition of the formation of neutral oil by-products occurs in the sulfation of secondary alcohols by chlorosulfonic acid when a secondary alcohol ethoxylate is present with the secondary alcohol to be sulfated. The resulting alcohol sulfates are useful in cleaning, wetting, detergent and emulsifying mixtures.

3,755,408

PROCESS FOR THE PREPARATION OF POLYBORIC ESTERS

Giovanni Cuneo, Milan, Italy, assignor to Montecatini-Edison S.p.A., Milan, Italy

No Drawing. Continuation of application Ser. No. 571,706, Aug. 11, 1966. This application Feb. 10, 1970, Ser. No. 9,118

Claims priority, application Italy, Aug. 11, 1965, 18,249/65

Int. Cl. C07f *5/04*

U.S. Cl. 260—462 R **5 Claims**

A process for making polyboric esters of the general formula

$$(RO)_2 \cdot (B_2O_3)_m$$

wherein *m* is greater or equal to 1 but preferably less than 2 and corresponds to the molar ratio of boron atoms to

RO units, and R is an alkyl radical with 2–6 carbon atoms, a phenyl radical, or a substituted-phenyl radical in which the substituent is constituted of one or more alkyl groups with 1 to 4 carbon atoms. The method involves mixing orthoboric acid and an inert organic liquid with a boiling point higher than 110° C. and subjecting the mixture to a temperature of 80° C.–220° C. to partially dehydrate the orthoboric acid to a boric acid having a B:OH ratio of 1 to a maximum of 2. The polyboric acid is esterified at 80° to 220° C. by means of an aliphatic alcohol with 2–6 carbon atoms, phenol or a substituted phenol wherein the substituent is at least one alkyl compound with 1–4 carbon atoms.

3,755,409

PREPARATION OF AROMATIC NITRILES BY REACTION OF AROMATIC HALIDES WITH METAL CYANATES AND CARBON MONOXIDE IN THE PRESENCE OF NICKEL OR PALLADIUM CATALYSTS

John F. Harris, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,347

Int. Cl. C07c *121/02*

U.S. Cl. 260—465 R **12 Claims**

One or two nitrile groups can be introduced onto aromatic (carbocyclic) rings by reaction between halogenated aromatic compounds (other than fluorinated), carbon monoxide and a metal cyanate in the presence of a nickel- or palladium-containing catalyst. For example, benzonitrile can be prepared from chlorobenzene, sodium cyanate and carbon monoxide in the presence of a nickel salt.

3,755,410

INTERMEDIATES

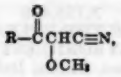
Harry Allen Albrecht, Towaco, and John Thomas Plati, Rutherford, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 6, 1970, Ser. No. 61,785. Divided and application Nov. 13, 1967, Ser. No. 682,551. Divided and application Apr. 6, 1965, Ser. No. 446,068. Again divided and this application Aug. 11, 1972, Ser. No. 279,918

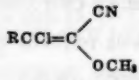
Int. Cl. C07c *121/34*

U.S. Cl. 260—465.6 **1 Claim**

Novel antibacterial N¹-(4-methoxy-3-alkyl-5-isoxazolyl)-sulfanilamides, N¹-(4-methoxy-5-alkyl-3-isoxazolyl) sulfanilamides and their base addition salts with pharmaceutically acceptable bases are described. The N¹-(4-methoxy-3-alkyl-5-isoxazolyl)sulfanilamides are prepared from the sequential intermediates 4-methoxy-5-alkylisoxazole,



wherein R is hydrogen or lower alkyl, and 5-amino-4-methoxy-3-alkylisoxazole. The N¹-(4-methoxy-5-alkyl-3-isoxazolyl)sulfanilamides are prepared from the sequential intermediates



wherein R is hydrogen or lower alkyl, and 3-amino-4-methoxy-5-alkylisoxazole.

3,755,411

HALO- OR OXY-SUBSTITUTED ALIPHATIC DI-OLEFINIC NITRILES

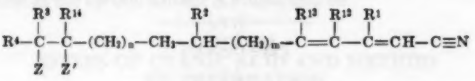
Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of applications Ser. No. 111,650, Ser. No. 111,702, Ser. No. 111,765, Ser. No. 111,766, and Ser. No. 111,770, all Feb. 1, 1971, and Ser. No. 115,725, Feb. 10, 1971, now Patent No. 3,706,733. This application Oct. 8, 1971, Ser. No. 187,897

Int. Cl. C07c *121/30*

U.S. Cl. 260—465.6 **11 Claims**

Aliphatic hydrocarbon tri-olefinic and aliphatic substituted, di-olefinic acids, esters, aldehydes, ketones, thioloesters, alcohols, thiols, halides, nitriles, amines, amides and derivatives thereof, intermediate therefor, syntheses thereof, and the control of insects, one embodiment of which is represented by the following formula



3,755,412

ALKYLATION OF ACETONITRILES

Lubomyr B. Taranko, Scotch Plains, N.J., and Robert H. Perry, Jr., West Concord, Mass., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 635,350, May 2, 1967. This application July 7, 1969, Ser. No. 839,693

Int. Cl. C07c *121/02, 121/66*

U.S. Cl. 260—465 R **12 Claims**

This invention relates to alkali metal salts of organonitrile carbanions, alkylated organonitrile hydrocarbons and to a process for their formation. The alkali metal salt compositions are prepared by reacting an active organic methylene compound containing at least one nitrile substituent with an aqueous solution of an alkali metal base in the presence of a diorgano sulfoxide. The alkylated compositions can be prepared by reacting the alkali metal salts of the organonitrile carbanions with an organohalide. Alternatively, the alkylated compositions can be prepared in a one-step operation by reacting the organonitrile composition with aqueous alkali metal base and organohalide in the presence of a diorgano sulfoxide, preferably dimethyl sulfoxide.

3,755,413

1-CYANOPHENOXY-2-HYDROXY-3-(CYCLOALKYL-AMINO)-PROPANES

Herbert Koppe, Werner Kummer, Helmut Stahle, and Karl Zeile, Ingenheim am Rhein, Albrecht Engelhardt, Mainz, and Werner Traunecker, Munster-Sarmsheim, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

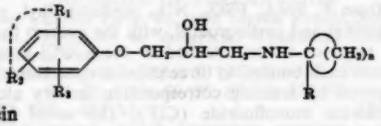
No Drawing. Filed July 22, 1970, Ser. No. 57,353

Claims priority, application Germany, July 23, 1969, P 19 37 477.7

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **6 Claims**

Racemic mixtures of a compound of the formula



wherein

R is alkyl of 1 to 5 carbon atoms,

R_1 is cyano, carboxyl, hydroxyl, amino, nitro, trifluoromethyl, alkyl of up to 5 carbon atoms, alkenyl of up to 5 carbon atoms, alkinyl of up to 5 carbon atoms,

alkoxy of up to 5 carbon atoms, alkenyloxy of up to 5 carbon atoms, alkinyloxy of up to 5 carbon atoms, hydroxyalkyl of up to 5 carbon atoms, alkoxyalkyl of up to 5 carbon atoms, aminoalkyl of up to 5 carbon atoms, alkylaminoalkyl of up to 5 carbon atoms, dialkylaminoalkyl of up to 5 carbon atoms, alkylamino of up to 5 carbon atoms, cyano(alkyl of up to 5 carbon atoms), alkoxy of up to 5 carbon atoms)carbonyl, alkyl of up to 5 carbon atoms)amino-carbonyl, alkylthio of up to 5 carbon atoms, acyloxy of up to 5 carbon atoms, acylamino of up to 5 carbon atoms, aryl of up to 10 carbon atoms, aralkyl of up to 10 carbon atoms, aryloxy of up to 10 carbon atoms, aralkoxy of up to 10 carbon atoms, arylamino of up to 10 carbon atoms or halogen,

R_2 is hydrogen, halogen, cyano, alkyl of up to 5 carbon atoms, alkoxy of up to 5 carbon atoms or alkenyl of up to 5 carbon atoms,

R_1 and R_2, together with each other, are 3,4-methylenedioxy,

R_3 is hydrogen, halogen, alkyl of up to 5 carbon atoms or alkoxy of up to 5 carbon atoms, and

n is an integer from 2 to 7, inclusive,

optically active components thereof, and non-toxic, pharmacologically acceptable acid addition salts of said racemic and optically active compounds, useful as β-adrenergic receptor blocking agents in warm-blooded animals.

3,755,414

4,4-DESMETHYL-3,11-DIOXOOLEANA-4,12-DIEN-30-OIC ACIDS AND INTERMEDIATES

John S. Baran, Morton Grove, and Barnett S. Pitzele, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,903
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468.5 **4 Claims**

The above-captioned compounds are manufactured from the 3-nor-4,4-desmethyl-4-isopropylidene alkyl esters of 11-oxoolean-12-en-30-oic acid. They are useful as pharmacological, e.g. hypocholesterolemic and hypotensive, agents.

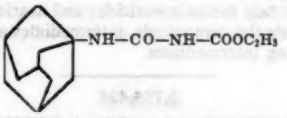
3,755,415

ADAMANTYL UREA DERIVATIVES

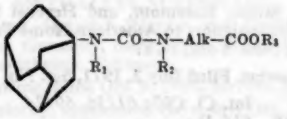
Carl Richter, Kurt Pluss, and Georg Feth, Schaffhausen, Switzerland, assignors to Cilag-Chemie, A.G.

No Drawing. Original application Oct. 28, 1969, Ser. No. 874,084, now Patent No. 3,703,537. Divided and this application Mar. 27, 1972, Ser. No. 243,522
Int. Cl. C07c *127/16*
U.S. Cl. 260—468 E **1 Claim**

Compounds useful as antiviral agents defined by the formulas:



and



wherein Alk is alkylene, R_1 and R_2 are each hydrogen or lower alkyl, and R_3 is hydrogen or a variously defined ester moiety.

3,755,416

NORACYMETHADOL CARBAMATES

Richard N. Booher, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,698
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **5 Claims**

Noracymethadol carbamates, analgesically active and useful in treatment of heroin addiction.

3,755,417

TRIS (4-CHLOROPHENOXY)ACETIC ACID AND ESTERS THEREOF

Charles J. Guinosso, Abington, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,556
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 G **2 Claims**

The invention concerns novel oxalic monoorthoacid monoesters and their method of preparation. The products are useful as lipid shifting agents.

3,755,418

FINISHING AGENTS WITH REDUCED FORMALDEHYDE ODOR FOR CELLULOSE CONTAINING TEXTILE MATERIALS

Russell M. H. Kullman, Metairie, John G. Frick, Jr., and Robert M. Reinhardt, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 23, 1968, Ser. No. 754,969, now Patent No. 3,556,713, dated Jan. 19, 1971. Divided and this application Sept. 18, 1970, Ser. No. 73,629
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C **1 Claim**

Finishing agents for fabrics of cellulosic fiber are formed by acetylation of methylol carbamates. The acetoxymethyl agents so formed can be used to produce wash-wear and durable-press cellulosic fabric with little release of formaldehyde during treatment of the fabric.

3,755,419

PROCESS FOR PREPARING ETHYLENE 1,2-DICARBOXYLIC ACID AND DERIVATIVE THEREOF

Chiyuki Fujii, Yamato, Michimasa Hirata, Tokyo, and Takeo Shinada, Ebina-Machi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,921
Claims priority, application Japan, Dec. 24, 1970, 45/117,293, 45/117,295
Int. Cl. C07c *69/60*
U.S. Cl. 260—485 R **4 Claims**

Ethylene 1,2-dicarboxylic acid or derivatives thereof, is prepared by reacting acetylene with carbon monoxide in the presence of a palladium compound and an amino acid.

3,755,420

TRIGLYCIDYL ETHER OF TRIHYDROXY BISPHENYL ESTER OF ACRYLIC ACID

Donald G. Stoffey, and Henry L. Lee, Jr., San Marino, Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

No Drawing. Original application Dec. 28, 1970, Ser. No. 102,044. Divided and this application July 14, 1972, Ser. No. 271,763
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **4 Claims**

Bisphenol-A-bis(2,3 - dimethacrylatopropyl ether) and the adduct of methacrylic acid and triglycidyl ether of trihydroxy biphenyl are utilized as binders for dental restorative compositions.

3,755,421

PREPARATION OF CARBOXYLIC ACID ESTERS

Donald M. Fenton, Anaheim, and Giovanni Biale, Placentia, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed June 27, 1968, Ser. No. 740,482

Int. Cl. C07c *69/40, 69/54, 69/66*

U.S. Cl. 260—484 R 13 Claims

Esters of alpha,beta-ethylenically unsaturated acids, of beta-alkoxy-substituted carboxylic acids and of dicarboxylic acids are obtained by oxidative carbonylation of hydrocarbon olefins. The reaction is performed by contacting the olefin and carbon monoxide with an alcohol in the presence of a Group VIII noble metal in a high oxidation state and a benzene or naphthalene quinone or hydroquinone. In a specific embodiment, ethylene is converted to alkyl acrylates, alkyl beta-alkoxypropionates and dialkyl succinates by contacting ethylene and carbon monoxide at a temperature about 100° C. and about 50 atmospheres with an alkanolic solution of soluble palladium salts and benzoquinone. The reaction results in the production of a large amount of the alkyl acrylate or alkyl beta-alkoxypropionate in preference to the production of byproducts such as alkyl propionates and acetals. The ester of the beta-alkoxypropionate can be readily pyrolyzed to obtain additional quantities of the alkyl acrylate useful as a monomer.

3,755,422

PREPARATION OF CAROTENOID COMPOUNDS

Jacques Morel, Choisy-Le-Roi, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Jan. 13, 1971, Ser. No. 106,262

Claims priority, application France, Jan. 15, 1970, 700,415

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 R 6 Claims

Isozeaxanthine and its saturated aliphatic monocarboxylic acid esters, useful as carotenoid pigments, are made by the action of iodine, in the presence of a said acid and an organic base, on retrodehydro-β-carotene, followed, if desired by saponification of the ester produced.

3,755,423

PROCESS FOR PREPARING AN UNSATURATED GLYCOL DIESTER

Takeru Onoda, Yokohama, and Junzo Haji, Tokyo, Japan, assignors to Mitsubishiki Chemical Industries Limited, Tokyo, Japan

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,871

Claims priority, application Japan, Apr. 17, 1971, 46/24,732; Dec. 29, 1971, 47/3,627; Feb. 7, 1972, 47/13,438

Int. Cl. C07c *67/04, 69/16, 69/74*

U.S. Cl. 260—497 A 29 Claims

Unsaturated glycol diesters are prepared at high reaction velocities, high degrees of conversion and high selectivity, by reacting a conjugated diene, a carboxylic acid and oxygen, in the presence of a solid catalyst containing palladium, at least one element selected from the group consisting of antimony, bismuth, tellurium and selenium. Tellurium and selenium are preferred since they aid in reducing the quantity of palladium lost in the reaction medium.

3,755,424

2-DIALKYLAMINO-1,3-BIS-(ALKOXYALKYLTHIO)PROPANES

Fred Kuhnen, Weil am Rhine, Germany, assignor to Sandoz Ltd. (also known as Sandoz AG) Basel, Switzerland

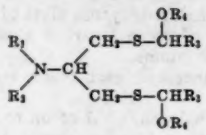
No Drawing. Filed Apr. 5, 1972, Ser. No. 241,453

Claims priority, application Switzerland, Apr. 13, 1971, 5,262/71

Int. Cl. C07c *149/24*

U.S. Cl. 260—501.19 7 Claims

The present invention concerns 2-dialkylamino-1,3-bis-(alkoxyalkylthio)propane derivatives of the formula:



wherein
R_1 and R_2 are each alkyl,
R_3 is hydrogen or alkyl and
R_4 is alkyl.

The compounds possess insecticidal and fungicidal properties.

3,755,425

OXIMINOPHOSPHONODITHIOATES

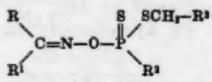
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,148. Divided and this application Mar. 9, 1972, Ser. No. 233,330

Int. Cl. C07f *9/38*

U.S. Cl. 260—502.5 2 Claims

Compounds having the formula



in which R is (1) alkyl or (2) lower alkylthiomethyl; R^1 is alkyl; R^2 is alkyl; and R^3 is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) phenylthio, (5) substituted phenylthio wherein the substitutent is halogen, (6)

wherein R^4 is hydrogen or alkyl, (7) halophenyl, (8) phthalimido, (9) vinyl, (10) carboalkoxy, (11) alkyl, (12) ethynyl, (13) $CCl_2=CR^5$— wherein R^5 is hydrogen or chlorine, (14) $—CH_2OC(O)NH$(lower alkyl) or (15) benzylthio, their use as insecticides and acaricides, process for preparing the compounds, intermediates and a process for preparing intermediates.

3,755,426

10-HALOPROSTAGLANDIN-A DERIVATIVES

Donald P. Strike, Rosemont, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,557

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—514 D 3 Claims

10-halo derivatives of prostaglandin-A compounds are prepared by epoxidation followed by treatment with hydrohalic acid. The compounds thus obtained have potent bronchodilator activity.

3,755,427

2-(MONO- AND DIFLUORO-4-BIPHENYL) PROPIONIC ACIDS

Stewart Sanders Adams, Armitage, John Bernard and John Stuart Nicholson, Nottingham, England, and Antonio Ribera Blancafort, Madrid, Spain, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Continuation-in-part of application Ser. No. 425,624, Jan. 14, 1965. This application July 25, 1969, Ser. No. 845,033

Int. Cl. C07c *63/52*

U.S. Cl. 260—515 A 4 Claims

2-(2-fluoro-4-biphenylyl)propionic acid, 2-(2'-fluoro-4-biphenylyl)propionic acid and 2-(2,2'-difluoro-4-biphenylyl)propionic acid possessing great anti-inflammatory, analgesic, and antipyretic activities.

3,755,428

DERIVATIVES OF α-ACYLHYDRAZINO-β-PHENYL-PROPIONIC ACID

Meyer Sletzinger, North Plainfield, Sandor Karady, Elizabeth, Manuel G. Ly, New Brunswick, and Seemon H. Pines, Murray Hill, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,770. Divided and this application June 24, 1971, Ser. No. 156,540

Int. Cl. C07c *103/32*

U.S. Cl. 260—519 2 Claims

Novel L-α-acylhydrazino-β-phenyl-propionitrile compounds useful as intermediates in the production of L-α-hydrazino-β-phenyl-propionic acids. Also included are processes for preparing the novel compounds of this invention by aminating L-α-acylamido-β-phenyl-propionitrile and processes for hydrolyzing the novel compounds of this invention to form L-α-hydrazino-β-phenyl-propionic acid compounds.

3,755,429

PROCESS FOR THE PREPARATION OF SULFONATED DETERGENT COMPOSITION

Herbert C. Smitherman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Oct. 12, 1971, Ser. No. 188,590

Int. Cl. C07c *143/02*

U.S. Cl. 260—513 R 11 Claims

A process for preparing a water-soluble sulfonated reaction product having excellent detergent properties which uses alpha-olefins as the starting reactant. The process comprises, as the first step, reacting each mole of alpha-olefin with 1.0 to 1.25 moles sulfur trioxide in a film reactor under process conditions of a reaction time of between 12 seconds and 50 seconds, a temperature of 32° F. to 180° F., and a pressure of 8 p.s.i.g. to 20 p.s.i.g. at the top of the reactor. This reaction mix is thereafter immediately reacted with a lower alcohol and is then neutralized and hydrolyzed to produce a valuable detergent composition.

3,755,430

PROCESS FOR THE PRODUCTION OF METHALLYL SULFONATE

Gunter Lorenz, Heinrich Rinkler, and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,206

Claims priority, application Germany, Oct. 19, 1968, P 18 04 135.5

Int. Cl. C07c *143/16*

U.S. Cl. 260—513 B 4 Claims

Process for the production of methallyl sulfonate by reacting a concentrated aqeuous solution of sodium sulfite with at least a 5% molar excess of methallyl chloride in the presence of an emulsifier and recovering the product by cooling the reaction mixture to a temperature of 0–15° C.

3,755,431

CYCLOPENTANE-TETRACARBOXYLIC ACID

Roland Guillemont, Bourg-La-Reine, France, assignor to Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,206

Claims priority, application France, Dec. 3, 1969, 6941684

Int. Cl. C07c *51/32, 61/06*

U.S. Cl. 260—514 K 4 Claims

This invention is addressed to a novel isomer of cyclopentane-tetracarboxylic acid having a melting point of about 160° C., and a tetramethyl ester thereof, which is prepared by subjecting 3,6-methylene 1,2,3,6-tetrahydrophthalic anhydride to a nitric acid oxidation reaction, and which can be used in the preparation of improved alkyd resins.

3,755,432

NEW PROCESS FOR THE PREPARATION OF 1-INDANCARBOXYLIC ACIDS

Terrence W. Doyle, Candiac, Leeson R. Morris, Hemmingford, and Marcel Menard, Candiac, Quebec, Canada, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 201,566, Nov. 23, 1971. This application July 11, 1972, Ser. No. 270,771

Int. Cl. C07c *63/00*

U.S. Cl. 260—515 R 7 Claims

Levorotatory 5-cyclohexyl-1-indancarboxylic acid is a useful anti-inflammatory agent in the treatment of inflammatory diseases in animals, including man. As such, a new and more efficient process has been discovered for the preparation of large quantities of the racemic mixture of the compound, (±)-5-cyclohexyl-1-indancarboxylic acid.

3,755,433

ASHLESS LUBRICATING OIL DISPERSANT

Edward F. Miller, and Walter W. Hellmuth, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,978

Int. Cl. C10m *1/22, 1/32*

U.S. Cl. 252—51.5 R 5 Claims

Polyisobutenyl-substituted N-aminoethylethanolamines are provided which function as ashless nitrogen-containing dispersants for lubricating oil compositions.

3,755,434

OXIDATION OF OLEFINS TO UNSATURATED ACIDS AND ALDEHYDES

Leon B. Levy, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 804,683, Mar. 5, 1969. This application Feb. 15, 1972, Ser. No. 226,536

Int. Cl. C07c *45/04, 57/04;* B01j *11/34*

U.S. Cl. 260—533 N 11 Claims

A process for the oxidation of olefins to the corresponding unsaturated aldehydes and acids, e.g. propylene to acrolein and acrylic acid, by reacting the olefin with oxygen in the presence of a catalyst of the empirical formula

$$Mo_aCo_bTe_cX_dO_e$$

wherein X is rhodium or boron. When *a* is 100, *b* is 40–200, *c* is 0.1–7.0 and *d* is 5–75 when X is rhodium and is 0.1 to 3.0 when X is boron.

3,755,435

N-(2-HYDROXY-HIGHER HYDROCARBYL)-N-LOWER HYDROCARBYL-AMINOCARBOXYLATES

Bjorn Sundby, Piscataway, Edward J. Kenney, Bernardsville, and Harold E. Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,991
Int. Cl. C07c *101/06*
U.S. Cl. 260—534 M **6 Claims**

N-(2-hydroxy-higher hydrocarbyl)-N-lower hydrocarbyl-aminocarboxylates or the corresponding aminocarboxylic acids are of the formula

$$R^1\text{—}CH(OH)CH_2\text{—}\underset{\displaystyle R^3}{\underset{|}{N}}\text{—}R^2COOX$$

wherein R^1 is an aliphatic hydrocarbon radical of 10 to 20 carbon atoms, R^2 is a hydrocarbon radical of 1 to 4 carbon atoms, R^3 is a divalent aliphatic or aromatic hydrocarbon radical of 1 to 9 carbon atoms, and X is either hydrogen or a salt-forming element or radical. In preferred embodiments of the invention, R^1 is an acyclic saturated radical of 12 to 16 carbon atoms, R^2 is methyl, R^3 is of 1 to 2 carbon atoms, and X is a monovalent metal or an alkanolamine, such as sodium or triethanolamine.

The novel compounds are surface active and many exhibit excellent substantivities to fibrous materials, especially cotton. They are useful as detergents or as constituents of detergent preparations. Preferred compounds function very effectively as softening agents, which may be employed in the final rinsing of laundry or textiles, if used alone or in conjunction with other detergent composition materials, in the wash water. The present N-(2-hydroxy-higher hydrocarbyl)-N-lower hydrocarbyl-aminocarboxylates may also be converted to the corresponding N-oxides, which are also effective detergents, and many of which may be employed as excellent softening agents for laundry and textiles.

3,755,436

PRODUCTION OF CITRIC ACID

Richard H. Wiley, New York, N.Y., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,383
Int. Cl. C07c *59/16*
U.S. Cl. 260—535 P **2 Claims**

Citric acid can be produced by the bimolecular decarboxylative self-condensation of oxaloacetic acid followed by oxidative decarboxylation with hydrogen peroxide. Citric acid can then be recovered from the resulting products.

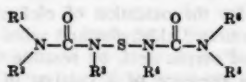
3,755,437

1,3-DISUBSTITUTED-1-UREIDO-1',3'-DISUBSTITUTED-1'-UREIDO SULFIDES

Melancthon Starr Brown, deceased, by Gustave K. Kohn, administrator, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,212
Int. Cl. C07c *161/00*
U.S. Cl. 260—545 R **9 Claims**

Compounds of the formula



wherein R^1 is phenyl optionally substituted with halogen, nitro, alkoxy or alkyl groups, R^2, R^3 and R^5 are hydrogen, or alkyl of 1 to 4 carbon atoms optionally substituted with halogen, R^4 is hydrogen; alkyl of 1 to 4 carbon atoms optionally substituted with halogen; phenyl group optionally substituted with halogen, nitro, alkoxy or alkyl groups and R^6 is phenyl; phenyl substituted with halogen, nitro, alkoxy or alkyl groups; or alkyl optionally substituted with halogen. The compounds find use as herbicides.

3,755,438

PRODUCTION OF SELENIUM COMPOUNDS

Patrick Joseph Keogh, Ilford, England, assignor to Ilford Limited, Ilford, England

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,836
Int. Cl. C07f *11/00*
U.S. Cl. 260—551 R **6 Claims**

A process for the production of selenosemicarbazides by reacting a selenosemicarbazone with a hydrazine is disclosed.

3,755,439

METHOD OF PREPARING ALKANESULFONAMIDES FROM ALKANESULFONYL CHLORIDES

Carl D. Kennedy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,332
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 A **6 Claims**

The present invention relates to a method of preparing alkanesulfonamides from the alkanesulfonyl chloride reaction mixture obtained by the sulfochlorination of a paraffin hydrocarbon. The alkanesulfonyl chloride mixture is added to an excess of a nitrogen base compound selected from the group consisting of ammonia and amines to form an alkanesulfonamide product mixture. By the present invention the alkanesulfonamide product mixture is heated to a temperature of from about 20° C. to about 200° C. at a pressure of from about 1 to about 350 atmospheres for a period of time sufficient to convert chain chlorinated alkane sulfonamide compounds contained in the product mixture to aminoalkanesulfonamides. Once formed, the aminoalkanesulfonamides may be removed from the product mixture by extraction.

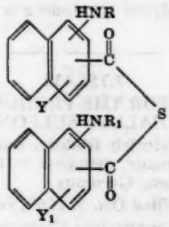
3,755,440

AMINO-NAPHTHOIC THIOLANHYDRIDES

Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 788,053, Dec. 30, 1968. This application Oct. 22, 1970, Ser. No. 83,227
Int. Cl. C07c *153/00*
U.S. Cl. 260—545 R **8 Claims**

Vinyl polymer compositions are stabilized against degradation and discoloration due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein Y and Y_1 are hydrogen or alkyl groups containing from 1 to about 12 carbon atoms and R and R_1 are hydrogen, aryl or alkyl groups containing from 1 to about 12 carbon atoms.

3,755,441
HYDROXY BENZOIC THIOLANHYDRIDES

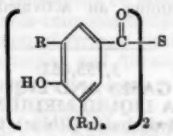
Stanley B. Mirviss, Stamford, Conn., and Carl C. Greco, Garnerville, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 788,054, Dec. 30, 1968. This application Oct. 22, 1970, Ser. No. 83,228

Int. Cl. C07c *153/00*

U.S. Cl. 260—545 R 3 Claims

Vinyl polymer compositions are stabilized against degradation and discolorization due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein R and R_1 are alkyl radicals consisting essentially of carbon and hydrogen and containing from 1 to about 12 carbon atoms and *a* is an integer with a value of from zero to one inclusive.

3,755,442
ACENAPHTHYL AMIDES AND AMINES

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 862,951, Oct. 1, 1969. This application Mar. 15, 1972, Ser. No. 234,986

Int. Cl. C07c *103/34*

U.S. Cl. 260—558 P 10 Claims

Acenaphthenones are reduced to the corresponding acenaphthenols and the latter converted to the corresponding amides by reaction with a nitrile in the presence of an acid. The amides may then be reduced to the corresponding amines. The amides and amines possess anti-inflammatory activity.

3,755,443
4,4'-ALKYLENE BIS(SEMICARBAZIDE) AND DERIVATIVES THEREOF

Chester Stephen Sheppard and Ronald Edward MacLeay, Tonawanda, N.Y., assignors to Pennwalt Corporation, East Orange, N.J.

No Drawing. Original application June 9, 1966, Ser. No. 556,263, now Patent No. 3,585,200, dated June 15, 1971. Divided and this application June 22, 1970, Ser. No. 59,808

Int. Cl. C07c *121/20, 133/02*

U.S. Cl. 260—554 1 Claim

The compound 4,4'-ethylene bis(semicarbazide) is prepared, said compound being utile in polymer formation.

3,755,444
BROMINATION OF ORGANIC COMPOUNDS WITH A BROMINE CHLORIDE-DIOXANE COMPLEX

John A. Schneider and Jack F. Mills, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Apr. 24, 1969, Ser. No. 819,541, now Patent No. 3,607,883. Divided and this application Apr. 16, 1971, Ser. No. 134,859

Int. Cl. 07c *17/12, 103/30*

U.S. Cl. 260—559 S 1 Claim

A bromine chloride complex of p-dioxane has been discovered which is useful as a solid source of bromine chloride. A dioxane-bromine chloride complex formed by mixing bromine chloride with dioxane in methylene chloride at 10° C. has been used to selectively brominate salicylanilide to give an 88% yield of 3,4',5-tribromosalicylanilide.

3,755,445
CYCLOALKYL-ALKYLENE- AND ARYLALKYLENE-POLYAMINES

Ernst Hanschke, Burghausen, Walter Fester, Konigstein, Taunus, and Franz Jakob, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

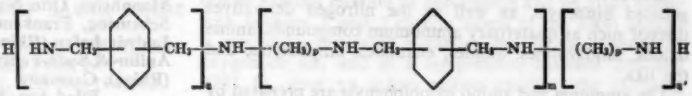
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,298

Claims priority, application Germany, Aug. 26, 1969, P 19 43 254.3

Int. Cl. C07c *87/02, 87/28*

U.S. Cl. 260—563 R 2 Claims

Novel polyamines are prepared in known manner. They have the formula



in which:

p represents a whole number of from 1 to 12, preferably from 2 to 4,

q and *q'* equal 0 or 1,

m represents a whole number of from 1 to 10, preferably from 1 or 2 (if *q* and *q'* are 0) to 4,

the linkages of the rings are 1,3 and/or 1,4-linkages, and, optionally, to a small extent, also 1,2-linkages, at least half of the rings being cyclo-aliphatic, the rest being aromatic. The rings may also be substituted by low molecular weight alkyl groups. The polyamines are suitable, for example, as modification components for the preparation of film and fiber-forming polyamides.

3,755,446
OPTICAL BRIGHTENERS OF THE BIS-STYRYLBENZENE SERIES

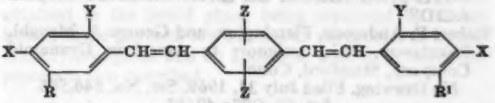
Horst Scheuermann, Ludwigshafen, and Peter-Matthias Hell, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 3, 1971, Ser. No. 168,731

Int. Cl. C07c *103/24;* C09b *23/00*

U.S. Cl. 260—559 A 3 Claims

Bisstyrylbenzene derivatives having the formula



in which the most important substituents R and R^1 are carboxyl groups or carboxylic ester or amide groups. The compounds are useful as optical brighteners, particularly for paper.

3,755,447
POLYALKYLENE POLYAMINE SEPARATION AND PURIFICATION

Lawrence P. Klemann, Somerville, Thomas A. Whitney, Linden, and Arthur W. Langer, Jr., Watchung, N.J., assignors to Esso Research and Engineering Company

Filed Nov. 26, 1971, Ser. No. 202,380

Int. Cl. C07c *85/16*

U.S. Cl. 260—563 7 Claims

This invention relates to a process for the separation and purification of polyalkylene polyamines such as occur in commercial mixtures via the selective formation of a complex between a polyamine and an inorganic salt wherein the metal portion of said salt is a metal selected

from the group consisting of lithium, sodium, potassium, magnesium, calcium, strontium and barium. This process has the advantage of operating with very high selectivities in the absence of large amounts of water and it permits recovery of the pure amines with no prior modification by methylation.

3,755,448

N-(PENTACHLOROBIPHENYL)-DIETHYLENE TRIAMINE

John J. Merianos, Jersey City, N.J., Edward Griffin Shay, Suffern, N.Y., and Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Original application Dec. 9, 1969, Ser. No. 883,636, now Patent No. 3,663,620, dated May 10, 1972. Divided and this application Mar. 15, 1972, Ser. No. 235,092

Int. Cl. C07c *91/16*

U.S. Cl. 260—570.5 P **1 Claim**

Microbiocidal ammonia and amino substituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

The ammonia and amino halobiphenyls are prepared by reacting the ammonia or the amine and the halobiphenyl reactants in such a manner that the ratio of amine to halobiphenyl is preferably limited to between two and five mols of amine to each mol of halobiphenyl.

3,755,449

PROCESS FOR PRODUCING AMINODIPHENYL ETHER DERIVATIVES

Ken Ito and Hiroshi Kaminaka, Toyonaka-shi, Osaka-fu, and Takashi Tamura, Ibaraki-shi, Osaka-fu, Japan, assignors to Sumitomo Chemical Co., Ltd.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,214

Claims priority, application Japan, Feb. 28, 1968, 43/13,106

Int. Cl. C07c *93/14*

U.S. Cl. 260—571 **1 Claim**

Process for catalytic reduction of a nitrodiphenyl ether derivative to produce an aminodiphenyl ether derivative which comprises treating the nitrodiphenyl ether derivative with hydrogen in the presence of Raney nickel in dimethylformamide at a temperature of 50 to 200° C. under a pressure of 5 to 150 kg./cm.^{2} for a period of 1 to 20 hours.

3,755,450

FREE-FLOWING UV ABSORBER COMPOSITIONS WITH MAGNESIUM OR ZINC SALTS OF FATTY ACIDS

Robert F. Anderson, Flemington, and George A. Menghi, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 31, 1969, Ser. No. 846,585

Int. Cl. C07c *49/82*

U.S. Cl. 260—591 **8 Claims**

Free-flowing 2-hydroxy-4-alkoxybenzophenones are provided by a process comprising admixing said alkoxybenzophenone and from about 1% to about 10% by weight of a magnesium or zinc salt of a saturated fatty acid containing from about 12 to about 20 carbon atoms.

3,755,451

EXCHANGE REACTIONS OF OCTADIENYL ESTERS WITH ACTIVE HYDROGEN COMPOUNDS

Abraham N. Kurtz and Melvin L. Farmer, Charleston, and Kenneth E. Atkins, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,065

Int. Cl. C07c *49/12*

U.S. Cl. 260—593 R **2 Claims**

3-octa-1,7-dienyl acetate is readily isomerized to 1-octa-2,7-dienyl acetate in the presence of palladium catalysts alone and at a rapid rate when a tertiary amine is added. This same allylic isomerization occurs with butenyl acetates. Allylic alcohols such as 2-octa-1,7-dienol also undergo this isomerization.

1-acetoxy-2,7-octadiene and 1-octa-2,7-dienol are each intermediates in the process for the production of linear octanol.

The catalyst system is also useful for replacing the functional groups in an allylic system. For example, octadienyl esters can be converted into (1) octadienyl amines via reaction with primary or secondary amines, (2) octadienyl ethers via reaction with alcohols, (3) other octadienyl esters by reaction with other carboxylic acids and (4) used to extend a carbon chain when reacted with compounds containing an activated carbon-hydrogen bond.

3,755,452

MIXING GASES AND LIQUIDS WITH A LIQUID MEDIUM

Richard Sinn, Ludwigshafen (Rhine), Guenter Herrmann, Mannheim, Otto Nagel, Wachenheim, Pfalz, Hubertus Scheuring, Frankenthal, Pfalz, and Paul Hornberger, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 3, 1967, Ser. No. 627,786

Int. Cl. B01f *5/04*; C07c *29/00, 45/02*

U.S. Cl. 260—586 B **11 Claims**

A process for mixing gases and liquids with a liquid medium in which the gas and the liquid are injected into an impulse exchange chamber which is located in the liquid medium, and apparatus for carrying out the mixing.

3,755,453

PROCESS FOR THE SYNTHESIS OF ADIPOIN (2-HYDROXYCYCLOHEXANONE)

Rudolph Rosenthal, Broomall, and Giovanni A. Bonetti, Wynnewood, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,814

Int. Cl. C07c *27/00*

U.S. Cl. 260—586 R **8 Claims**

A process for preparing 2-hydroxycycloaliphatic ketones comprising reacting the corresponding cycloaliphatic ketones with an organic hydroperoxide in the presence of formic acid.

3,755,454

ORGANIC PEROXIDES AND METHOD THEREFOR

Yun Ger Chang and Philip S. Bailey, Austin, Tex., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Original application Aug. 21, 1968, Ser. No. 754,472. Divided and this application Aug. 10, 1971, Ser. No. 170,621

Int. Cl. C07c *49/76*

U.S. Cl. 260—590 **9 Claims**

This invention discloses a process of preparing organic peroxides, by reacting a hydroperoxide having the general formula R—O—O—H with an α,β-unsaturated ketone. The α,β-unsaturated ketone may have a straight chain structure or a cyclic structure. Reaction takes place at a temperature from about 0° C.–80° C. in the presence of an acidic catalyst. The mole ratios of the components may vary from about 10:1 to 1:10.

3,755,455

(1-ALKOXY-2-NAPHTHYL)-SUBSTITUTED OR UNSUBSTITUTED PHENYLKETONES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wonder, Inc., Hanover, N.J.

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,668

Int. Cl. C07c *49/80, 49/82*

U.S. Cl. 260—591 **3 Claims**

(1-alkoxy - 2 - naphthyl)-substituted or unsubstituted phenylketone, e.g., (1-methoxy-2-naphthyl)-phenylketone,

prepared by oxidizing a corresponding 1-alkoxy-2-phenyl-2-naphthalenemethanol. The compounds are useful as anti-inflammatory agents.

3,755,456
ALDEHYDE SEPARATION PROCESS
Wayne B. Gitchel, Rothschild, Donald G. Diddams, Schofield, and James W. Barr, Rothschild, Wis., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Filed Nov. 10, 1970, Ser. No. 88,522
Int. Cl. C07c *45/24*
U.S. Cl. 260—600 2 Claims

Mixtures of syringic aldehyde and vanillin are separated into the pure components by selective precipitation of the syringic aldehyde-ammonia complex from aqueous methanol, and isolation of syringic aldehyde and vanillin from the acidified complex and filtrate, respectively.

3,755,457
PREPARATION OF TETRAKIS(ALPHAHYDROXY-ORGANO)PHOSPHONIUM ACID SALTS FROM ELEMENTAL PHOSPHORUS
Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Aug. 25, 1971, Ser. No. 174,953
Int. Cl. C07f *9/28*
U.S. Cl. 260—606.5 F 13 Claims

Tetrakis(alphaorgano)phosphonium acid salts, and specifically tetrakis(hydroxymethyl)phosphonium chloride, are prepared by a process which includes the step of reacting elemental phosphorus and an aldehyde, such as formaldehyde, with hydrochloric acid, in the presence of an electropositive metal. Other acid salts of the tetrakis (hydroxyorgano)phosphonium compound can be prepared by substituting other acids, e.g., hydrobromic acid, sulfuric acid, phosphoric acid, and the like, for hydrochloric acid.

These compounds are useful as fireproofing agents for cellulosic textile materials.

3,755,458
OXIDATION OF PROPYLENE AND ISOBUTENE TO UNSATURATED ALDEHYDES
Theodor Vrbaski, Harvey, Ill., and Thomas D. Sheehan, Kalamazoo, Mich., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed Sept. 10, 1968, Ser. No. 758,666
Int. Cl. C70c *45/02*
U.S. Cl. 260—604 R 11 Claims

A process for the catalytic vapor phase oxidation of propylene and isobutene to unsaturated aldehydes, i.e. acrolein and methacrolein, respectively. The oxidation is conducted in the vapor phase at a temperature of about 350 to 550° C. with molecular oxygen-containing gas and in contact with an oxidation catalyst consisting essentially of oxides of copper, arsenic and from one to two members of Group VI having an atomic number of 42 to 74, i.e. molybdenum, tellurium and tungsten. The metals are present in the catalyst in the following atomic ratios:

$$Cu_aAs_bTe_cX_d$$

where X is molybdenum or tungsten, *a* is about 2 to 30, *b* is about 0.1 to 15, *c* is 0 to about 5, and *d* is about 2 to 30. Also, when *c* is 0, X is molybdenum. Very high selectivity and total conversions are obtained.

3,755,459
PHENYLPHOSPHONIUM SALTS
Julius Diamond, Lafayette Hill., Pa., assignor to William H. Rorer, Inc., Washington, Pa.
No Drawing. Filed Jan. 22, 1971, Ser. No. 109,020
Int. Cl. C07f *9/54*
U.S. Cl. 260—606.5 F 22 Claims

Novel phenylphosphonium salts have been prepared. Compounds of this invention possess useful gastric antisecretory, spasmolytic and anti-ulcerogenic properties. A method of treating gastrointestinal hyperacidity and ulceration has also been disclosed.

3,755,460
PRODUCTION OF TRIALKYLPHOSPHONIUM HALIDES
Horst Staendeke, Bruhl, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack bie Cologne, Germany
Filed Mar. 31, 1972, Ser. No. 240,033
Claims priority, application Germany, Apr. 3, 1971, P 21 16 355.3
Int. Cl. C07f *9/54*
U.S. Cl. 260—606.5 F 17 Claims

Production of trialkylphosphonium halides of the general formula

$$(R_3PH)X$$

in which R stands for alkyl groups having from 1 to 3 carbon atoms and X stands for a halogen atom. A vaporous or gaseous mixture of phosphorus and an alkyl halide with between 1 and 3 carbon atoms in the alkyl radical is passed by means of a carrier gas, in the absence of oxygen or air, and at a temperature between 280 and 420° C., over an active carbon catalyst, the resulting gaseous reaction mixture is subjected to fractional condensation so as to isolate monoalkylhalogenophosphine, dialkylhalogenophosphine and a two layer-forming mixture of trialkylphosphonium halide and unreacted phosphorus therefrom, and the trialkylphosphonium halide is separated.

3,755,461
PROCESS FOR THE PRODUCTION OF ORGANIC DISULPHIDES
Georges Kvasnikoff, Monein, Alain Pfister, Pau, and Robert Vecchiutti, Jurancon, France, assignors to Societe Anonyme dite: Societe Nationale des Petroles D. Aquitaine, Courbevoie, France
Filed Mar. 24, 1972, Ser. No. 237,895
Claims priority, application France, Mar. 29, 1971, 7110938
Int. Cl. C07c *149/12*
U.S. Cl. 260—608 13 Claims

A process for preparing organic disulphides, by oxidizing the corresponding mercaptan with sulphur in the presence of a basic catalyst is characterized by the fact that liquid sulphur is sprayed finely over the surface of a liquid reaction phase, in a reactor equipped with a stirrer, while the liquid mercaptan is injected into this liquid phase which consists of a solution of mercaptan and of disulphide obtained during the reaction, the disulphide obtained in the liquid phase being separated by means known in the previous art. The use of the process to obtain dimethyldisulphide and an apparatus used to perform the process is also described.

3,755,462
PROCESS FOR THE PREPARATION OF POLYETHER THIOETHERS
Eberhart Degener, Opladen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 1, 1971, Ser. No. 177,100
Claims priority, application Germany, Sept. 4, 1970, P 20 43 899.7
Int. Cl. C07c *149/14*
U.S. Cl. 260—609 R 7 Claims

This invention relates to an improved process for the preparation of polyether thioethers which are suitable for use as plasticizers. It has been found that the condensation of thioglycol which is catalyzed with phosphorous acid can be substantially accelerated by also adding a small quantity of a salt of metal from the group II, II-A, VIII-A of the Periodic System and an organic sulphonic acid.

3,755,463
PROCESS FOR THE PREPARATION OF HYDROXYALKYL MERCAPTANS

Wilfried Umbach, Langenfeld Rhineland, Rainer Mehren, Wesel-Lackhausen, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 818,444, Apr. 22, 1969. This application Oct. 6, 1971, Ser. No. 187,191
Claims priority, application Germany, Apr. 23, 1968, P 17 68 265.4
Int. Cl. C07c *149/14*
U.S. Cl. 260—609 R 6 Claims

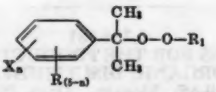
Reacting hydrogen sulfide with mono or poly, terminal or non-terminal, aliphatic or cycloaliphatic epoxide at a temperature of from −20° C. to 150° C. in the presence of 0.01 to 10% by weight, based on the epoxide, of an aliphatic, cycloaliphatic, aromatic and/or heterocyclic, primary or secondary amines, to produce a higher molecular weight hydroxyalkyl mercaptan.

3,755,464
TERTIARY-ALKYL HALOCUMYL PEROXIDES

Richard Anthony Bafford, Aiken, S.C., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 771,344, Oct. 28, 1968. This application Feb. 25, 1970, Ser. No. 13,792
Int. Cl. C07c *73/08*
U.S. Cl. 260—610 R 8 Claims

Tertiary-alkyl halocumyl peroxides of the formula



wherein X is F, Cl, or Br; n=1–5; R is H, alkyl, cycloalkyl, or aryl; and R_1 is tertiary-alkyl of 4–8 carbon atoms. These peroxides are useful for crosslinking polymeric materials without producing an objectionable odor.

3,755,465
DIFUNCTIONAL BETA-HYDROXY PERESTERS AND METHOD OF MAKING SAME

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed Mar. 9, 1971, Ser. No. 122,545
Int. Cl. C07c *73/02*
U.S. Cl. 260—610 D 1 Claim

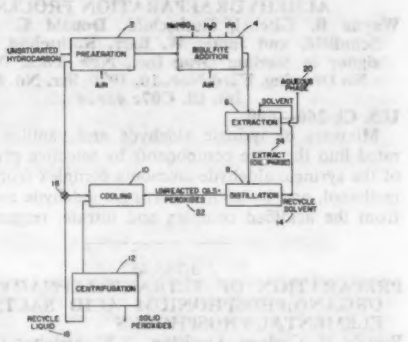
Difunctional beta-hydroxy peresters are prepared by reacting beta-butyrolactone or beta-propiolactone with a difunctional hydroperoxide in the presence of either an acidic or a basic catalyst at a temperature ranging from about 0° C. to about 100° C. and at a preferred temperature ranging from about 20° C. to about 45° C. The mole ratio of beta-lactone to difunctional hydroperoxide may range from about 2:1 to about 3:1 with a preferred mole ratio ranging from about 2.0:1 to about 2.2:1. Compounds of this invention are highly efficient polymerization initiators and cross-linking agents.

3,755,466
SELECTIVE DECOMPOSITION OF HYDROPEROXIDES IN THE PRESENCE OF POLYMERIC PEROXIDES AND RECOVERY OF THE POLYMERIC PEROXIDES

Charles J. Norton, Berkeley, Calif., and Dennis E. Drayer, Littleton, Michael J. Reuter, Denver, and Kent W. Robinson, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 4, 1968, Ser. No. 772,966
Int. Cl. C07c *73/00*
U.S. Cl. 260—610 B 7 Claims

Mixtures comprising hydroperoxides and polymeric peroxides obtained by the preaeration of unsaturated hydrocarbons are treated with aqueous bisulfite to selectively destroy the more reactive hydroperoxides. The resultant mixture is solvent extracted and the extract phase, which contains the polymeric peroxides, is distilled to remove the solvent, cooled and centrifuged to produce a



product of polymeric peroxides. These economically prepared polymeric peroxides are useful, interalia, as free radical initiators and as catalysts in polymerization reactions.

3,755,467
TETRACHLORO ARYL DIETHERS

Gerhard Darsow, Krefeld-Uerdingen, Ludwig Bottenbruch, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Aug. 12, 1968, Ser. No. 752,173, now abandoned. Divided and this application Jan. 25, 1971, Ser. No. 109,713
Claims priority, application Germany, Aug. 18, 1967, P 16 43 344
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 R 3 Claims

The invention is concerned with novel halogen-containing arylethers or polyethers and the process for the production thereof.

3,755,468
1 - CHLORO - 1,1,3,3,3 - PENTAFLUORO-2-PROPYL METHYL ETHER AS INHALATION ANESTHETIC

Everett E. Gilbert and Benjamin Veldhuis, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Jan. 10, 1967, Ser. No. 608, 276, now Patent No. 3,594,484. Divided and this application Apr. 5, 1971, Ser. No. 131,473
Int. Cl. C07c *43/00*
U.S. Cl. 260—614 F 1 Claim

This application relates to the novel compound 1-chloro-1,1,3,3,3-pentafluoro-2-propyl methyl ether and its use as a potent general inhalation anesthetic having a high margin of toxic safety.

3,755,469
CONTINUOUS MANUFACTURE OF ACETYLENE ALCOHOLS

Heinrich Pasedach, Ludwigshafen, Walter Himmele, Waldorf, Ludwig Vogel, Frankenthal, and Klaus Weinerth, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 10, 1969, Ser. No. 840,844
Claims priority, application Germany, July 10, 1968, P 17 68 877.6
Int. Cl. C07c *33/04, 35/02*
U.S. Cl. 260—617 A 8 Claims

Continuous manufacture of acetylene alcohols by the ethynylation of aldehydes or ketones with at least 0.6

mole of a basic condensing agent per mole of aldehyde or ketone at 5 to 26 atm. gauge, the development of a gas phase in the reaction chamber being avoided.

3,755,470

PROCESS FOR PREPARING POLYHALO PHENOLS

Edwin B. Michaels, Gregory Court 06855, and John W. Lee, Glen Ave. 06850, both of Norwalk, Conn.

No Drawing. Filed July 31, 1968, Ser. No. 748,982

Int. Cl. C07c *39/32*

U.S. Cl. 260—623 R 10 Claims

A process is provided for the hydrolysis of polyhalobenzene to polyhalo phenols in good yields and purity by initially reacting ethylene glycol with an alkali metal hydroxide to obtain a mixture comprising ethylene glycol alkali metal derivative, alkali metal hydroxide and ethylene glycol, adding to the latter mixture an alkane of from 6 to 14 carbon atoms or mixtures of the same, such as mineral spirits or deodorized kerosene, then introducing a polyhalobenzene, whereby hydrolysis of the latter occurs and, thereafter, recovering the so-hydrolyzed benzene.

3,755,471

NONANITROTERPHENYL

Joseph C. Dacons, Washington, D.C., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 31, 1963, Ser. No. 320,579

Int. Cl. C07c *79/10*

U.S. Cl. 260—645 3 Claims

1. The compound 2,2',2'',4,4',4'',6,6',6''-nonanitroterphenyl.

2. The method of preparing polynitropolyphenyls which comprises reacting copper dust with a picryl halide and a dihalotrinitrobenzene under anhydrous conditions in the presence of a diluent therefor.

3,755,472

8-HALO-2-MENTHENE AND ITS METHOD OF PREPARATION

Albert B. Booth, Jekyll Island, Ga., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application July 9, 1968, Ser. No. 743,293, which is a division of application Ser. No. 563,370, July 7, 1966. Divided and this application July 27, 1970, Ser. No. 58,683

Int. Cl. C07c *17/08, 23/10*

U.S. Cl. 260—648 R 2 Claims

An 8-halo-2-menthene, such as 8-chloro-2-menthene, is prepared by reacting d-trans-isolimonene and a hydrogen halide, such as hydrogen chloride. d-2,4(8)-p-menthadiene and 2-trans-menthene can be prepared from the 8-halo-2-menthenes.

3,755,473

PROCESS FOR SEPARATING MONO-CHLOROMETHYLATION AND DI-CHLOROMETHYLATION PRODUCT OF A C_{10} OR LOWER AROMATIC HYDROCARBON

Harry E. Cier and Hulen L. Wilder, Baytown, Tex., assignors to Esso Research and Engineering Company

Original application May 2, 1968, Ser. No. 726,053. Divided and this application Sept. 3, 1971, Ser. No. 177,817

Int. Cl. C07c *25/14*

U.S. Cl. 260—651 R 5 Claims

A process for separating the mono-chloromethylation from the di-chloromethylation products of aromatic hydrocarbons of C_{10} or lower whose mono-chloromethylation products have a melting point of about 25° C. or higher. A chloromethylation reaction mixture is heated with a C_6 to C_9 aromatic hydrocarbon in the liquid phase to dissolve the mono-chloromethylation and di-chloromethylation products and is then cooled to precipitate solid di-chloromethylation product. Solid di-chloromethylation product is separated from the aromatic hydrocarbon solution and washed with a C_5 to C_8 saturated hydrocarbon in the liquid phase to high purity. The aromatic hydrocarbon solution is vaporized to leave a residue including the mono-chloromethylated product. The residue is heated with a saturated C_5 to C_8 hydrocarbon in the liquid phase to dissolve mono-chloromethylated product therein. Then the hot saturated hydrocarbon is separated from undissolved solids and is cooled to precipitate solid mono-chloromethylated product, which is then recovered from the saturated hydrocarbon.

3,755,474

CONVERSION OF HALOCARBON COMPOUNDS

Geir Bjornson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 29, 1970, Ser. No. 58,993

Int. Cl. C07c *17/20*

U.S. Cl. 260—653 10 Claims

Perhaloethane compounds in the presence of elemental bromine or chlorine and alkali metal or alkaline earth metal catalysts are converted to halocarbon compounds having a chemical composition different from the feedstock material.

3,755,475

PROCESS FOR THE RECOVERY OF HALOALKANES

Robert Fuhrmann, 32 Cross Road, Morris Plains, N.J. 07950; John Pisanchyn, 15 Washington Place, Morristown, N.J. 07960; and Fred W. Koff, 288 Parker Ave., Clifton, N.J. 07015

No Drawing. Continuation-in-part of application Ser. No. 720,480, Apr. 11, 1968. This application Feb. 25, 1971, Ser. No. 118,981

Int. Cl. C07c *17/38*

U.S. Cl. 260—652 P 7 Claims

A process for the separation of haloalkanes from alkanes in a mixture containing the same whereby the mixture is dissolved in a ketone solvent, the temperature lowered below the solidification temperature of the alkanes, and separation of the liquid and solid phases effected. The liquid phase, enriched in haloalkanes, is treated to remove the solvent while the solid phase, enriched in alkanes, may be warmed and recycled. The process is particularly applicable to mixtures derived from the free radical halogenation of alkanes to provide a product stream containing a high proportion of haloalkanes useful in the preparation of alkylbenzenes, alkylphenols and olefins.

3,755,476

DEHYDROHALOGENATION PROCESS

James W. Crary, Wilmington, and Robert Edward Tarney, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 639,634, May 19, 1967. This application Jan. 14, 1970, Ser. No. 2,977

Int. Cl. C07c *21/20*

U.S. Cl. 260—655 8 Claims

The halogen containing compound, 3,4-dichloro-1-butene, is treated with a calculated amount of alkali metal hydroxide in the presence of a catalyst in an aqueous medium initially containing 30% to 55% hydroxide and finally containing at least 25% hydroxide by weight based on the water and said hydroxide.

3,755,477

PROCESS FOR PRODUCING FLUORINATED HYDROCARBONS

Richard Andrew Firth and George Edward Foll, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 22, 1970, Ser. No. 48,497
Claims priority, application Great Britain, Feb. 26, 1969, 32,543/69
Int. Cl. C07c *17/08, 17/20*
U.S. Cl. 260—653.4 15 Claims

An improved chromia catalyst for fluorination of halogenated hydrocarbons is prepared by treating a chromium hydroxide paste with water or steam before being dried and calcined.

3,755,478

CYCLIC PROCESS FOR THE PREPARATION OF DIORGANOMAGNESIUM COMPOUNDS

Conrad W. Kamienski, Gastonia, N.C., assignor to Lithium Corporation of America, New York, N.Y.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,931
Int. Cl. C07f *3/02*
U.S. Cl. 260—665 R 11 Claims

A cyclic process for the preparation of diorganomagnesium compounds which involves, first, preparing a diorganomagnesium compound from magnesium metal and an organic chloride in a hydrocarbon medium; second, reacting the resulting mixture of diorganomagnesium and magnesium chloride with sufficient organolithium to react with the magnesium chloride to produce hydrocarbon-soluble diorganomagnesium compounds; third, separating therefrom the by-product lithium chloride and subsequently reacting it with an alkyl or aryl chloride and sodium metal to regenerate the organolithium compound which is then finally recycled to the reaction mixture obtained in the first step described above.

3,755,479

BERYLLIUM HYDRIDE COMPOSITIONS AND THEIR USE IN MAKING CYCLOPENTADIENYL BERYLLIUM HYDRIDE COMPOUNDS

Everett M. Marlett and Robert N. Sanders, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Oct. 24, 1967, Ser. No. 678,489
Int. Cl. C07f *3/00*
U.S. Cl. 260—665 R 6 Claims

Beryllium hydride, dissolved in a novel solvent therefor, dicyclopentadienyl beryllium, reacts with the latter on prolonged heating at 105–115° C. to yield cyclopentadienyl beryllium hydride. This compound is useful as an intermediate for cyclopentadienyl beryllium alkyls and as the basis of a low-pressure route to crystalline beryllium hydride.

3,755,480

DEHYDROGENATION WITH A PLATINUM-LEAD CATALYTIC COMPOSITE

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application Oct. 20, 1969, Ser. No. 867,861, now Patent No. 3,649,565, which is a continuation-in-part of abandoned application Ser. No. 835,218, June 20, 1968. Divided and this application Aug. 11, 1971, Ser. No. 170,953
Int. Cl. C07c *5/18, 15/10*
U.S. Cl. 260—668 D 23 Claims

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component and a lead component with a porous carrier material. A specific example of the catalytic composite used in the dehydrogenation method disclosed herein is a combination of a platinum component, a lead component and an alkali or alkaline earth component with a porous carrier material in a manner such that the platinum and lead components are uniformly distributed throughout the porous carrier material, the composite contains about 0.01 to about 5 wt. percent of the alkali metal or alkaline earth metal and the lead component is present in an amount sufficient to result in an atomic ratio of lead to platinum of about 0.05:1 to about 0.9:1.

3,755,481

DEHYDROGENATION METHOD AND MULTICOMPONENT CATALYTIC COMPOSITE FOR USE THEREIN

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 856,810, Sept. 10, 1969, now Patent No. 3,632,503. This application Sept. 29, 1971, Ser. No. 184,965
Int. Cl. C07c *5/18*
U.S. Cl. 260—668 D 18 Claims

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation coiditions with a catalytic composite, comprising a combination of catalytically effective amounts of a platinum group component, a tin component and a germanium component with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of a platinum group component, a tin component, a germanium component and an alkali or alkaline earth component with a porous carrier material wherein substantially all of the platinum group component is present as the elemental metal and substantially all of the germanium component is present in an oxidation state above the elemental metal, wherein the composite contains about 0.01 to about 2 wt. percent of platinum group metal, about 0.01 to about 5 wt. percent tin, about 0.01 to about 5 wt. percent germanium and about 0.01 to about 5 wt. percent alkaly or alkaline earth metal.

3,755,482

MULTISTAGE PRODUCTION OF STYRENE

Kenneth R. Nunnally, Brazoria, William M. Castor, Clute, and Robert R. Turley, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,946
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 R 3 Claims

A process for improving the styrene yield in the catalytic multistage dehydrogenation of ethylbenzene wherein the average temperature of each stage is at least 10° C. higher than the preceding stage.

3,755,483

VAPOR-PHASE ALKYLATION IN PRESENCE OF CRYSTALLINE ALUMINOSILICATE CATALYST

George Thomas Burress, Beaumont, Tex., assignor to Mobile Oil Corporation

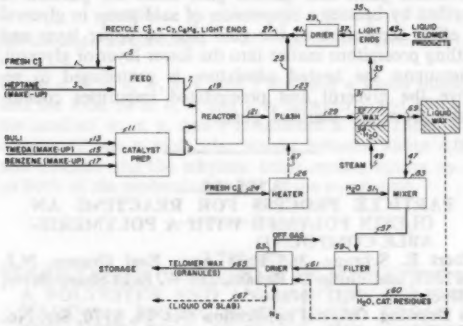
No Drawing. Filed Apr. 28, 1972, Ser. No. 248,365
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 R 10 Claims

A process is provided for alkylation of aromatic hydrocarbons by contacting same with an alkylating agent in a reaction zone maintained under conditions such that said alkylation is accomplished in the vapor-phase and in the presence of a catalyst comprising a crystalline aluminosilicate zeolite characterized by a unique X-ray diffraction pattern, said catalyst under said conditions being capable of affording a high and selective yield of desired alkylaromatic product.

3,755,484
PROCESS FOR MAKING SYNTHETIC WAXES

Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

Filed Oct. 30, 1970, Ser. No. 85,606
Int. Cl. C08f *1/88*
U.S. Cl. 260—671 B 8 Claims



An efficient, simplified wax finishing process which comprises steam-stripping the wax to remove light ends and catalyst residues; separating the wax from the aqueous phase containing the stripped catalyst residues and light ends and recovering the wax product.

3,755,485
HYDROCARBON ALKYLATION PROCESS

Jay E. Sobel, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed July 30, 1971, Ser. No. 167,790
Int. Cl. C07c *3/54*
U.S. Cl. 260—671 R 8 Claims

A process is disclosed for alkylating an alkylatable hydrocarbon reactant with an olefin-acting reactant utilizing an alkylation catalyst diluted with from about 0.001 wt. percent to about 40 wt. percent, based on the catalyst, of a catalyst diluent derived from a terpene or mixture of terpenes. The catalyst diluent is formed by reacting a terpene, or mixture of terpenes, with an alkylation catalyst.

3,755,486
DEHYDROCYCLIZATION OF HYDROCARBONS

Masayoshi Oishi, Boothwyn, and Walter A. Butte, Jr., West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,405
Int. Cl. C07c *5/26, 5/27*
U.S. Cl. 260—673.5 9 Claims

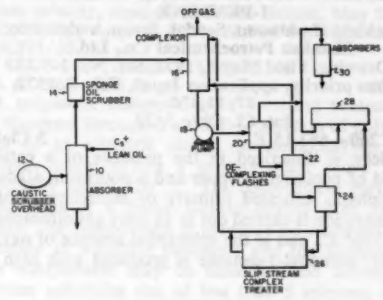
Process of dehydrocyclizing C_6–C_{10} hydrocarbons having at least a C_6 backbone using a Li, Na or K zeolite X or Y or faujasite impregnated with 0.3 to 1.4 percent Pt at from 500 to 560° C. and preferably 510 to 555° C. using a partial pressure of H_2 of from 10 to 300 p.s.i. and preferably 50 to 200 p.s.i. to form benzene and alkylbenzenes. Optionally the catalyst can be treated with chlorine so that it contains from 0.3 to 1.5 weight percent chlorine which improves the effectiveness of the catalyst.

3,755,487
OLEFIN COMPLEXING PROCESS

Charles E. Jahnig, Rumson, David W. Savage, Summit, and Hugh H. Horowitz, Elizabeth, N.J., assignors to Esso Research and Engineering Company

Filed June 2, 1972, Ser. No. 259,078
Int. Cl. C07c *7/00*
U.S. Cl. 260—677 A 10 Claims

A process is described for separating and recovering complexible ligands from feedstreams containing them, comprising the steps of complexing the ligands with a complexing solution, stripping impurities out of solution, decomplexing by flashing at pressures of from 1 atmosphere to about 40 atmospheres, recycling solvent to the complexer and thereafter recovering said ligands as a high purity product. The complexing solution comprises Group I–B metal salts dissolved in low volatility aromatic solvents. The ligands are decomplexed by either flashing off at high pressures or by multiple stage flashing.



3,755,488
SELECTIVE ABSORPTION AND HYDROGENATION OF ACETYLENES

Marvin M. Johnson and Gerhard P. Nowack, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,168
Int. Cl. C07c *11/72*
U.S. Cl. 260—677 A 10 Claims

A manufacturing method for the purification and production of olefins through selective absorption of acetylenes impurities with a liquid absorbent and hydrogenating the resulting acetylenes-enriched liquid absorbent with a Group VIII catalyst, converting thereby the acetylenes to monoolefins having the same number of carbon atoms per molecule as the converted acetylenic compound.

3,755,489
SYNTHESIS OF 1,2-BUTADIENE

Durward T. Roberts, Jr. and Edward L. Kay, Akron, Lawrence E. Calihan, Cuyahoga Falls, and Lynn B. Wakefield, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,961
Int. Cl. C07c *5/24*
U.S. Cl. 260—680 R 5 Claims

Significant quantities of 1,2-butadiene are produced from a 2-butyne feed stream by placing the feed stream in contact with a base-treated catalyst comprising silica or alumina for from 1.0 to 100 seconds at a temperature of from about 200° C. to about 600° C., and recovering the desired 1,2-butadiene from the products thus formed.

3,755,490
OLEFIN POLYMERIZATION CATALYZED BY A SUPPORTED BLACK AMORPHOUS NICKEL COMPLEX

Jin Sun Yoo, South Holland, and Henry Erickson, Park Forest, Ill., assignors to Atlantic Richfield Company

No Drawing. Filed May 1, 1969, Ser. No. 821,134
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D 24 Claims

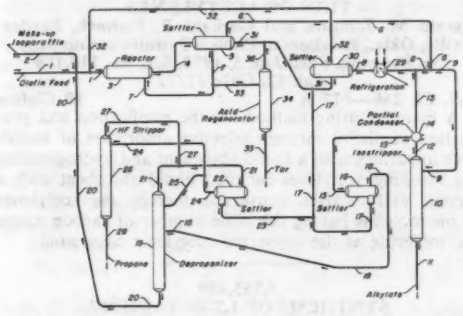
A solid phase catalyst composition comprising a complex of nickel, a Group V-A electron donor ligand, and a non-protonic Lewis acid and reducing agent on a solid,

acidic silica-based support. Exemplary is a complex comprising nickel acetylacetonate, trialkylphosphine, and ethylaluminum sesquichloride on a solid, acidic silica-based support. Use of the catalyst in the polymerization of olefin hydrocarbons is also disclosed.

3,755,491
PROCESS FOR PRODUCING 4-METHYL-1-PENTENE
Harukichi Hashimoto, Sendai, Japan, assignor to Idemitsu Petrochemical Co., Ltd.
No Drawing. Filed May 1, 1972, Ser. No. 249,253
Claims priority, application Japan, Feb. 3, 1972, 47/11,870
Int. Cl. C07c *3/20*
U.S. Cl. 260—683.15 E 3 Claims

Propylene is dimerized in the presence of a catalyst composed of potassium, copper and a potassium alkoxide of an aliphatic saturated primary or secondary alcohol. The dimerization is carried out in an inert gas atmosphere, at 100°–250° C., and in the substantial absence of oxygen and water. 4-methyl-1-pentene is produced with high selectivity.

3,755,492
SEPARATE ALKYL FLUORIDE ALKYLATION WITH A SUBSTANTIALLY PURE HYDROGEN FLUORIDE STREAM
Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Mar. 12, 1971, Ser. No. 123,502
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 5 Claims



Alkylatable hydrocarbon, i.e. isobutane, isopentane or isohexane, and an olefinic hydrocarbon are reacted in a hydrogen fluoride catalyzed process, the effluent from the reaction zone is commingled with a substantially pure hydrogen fluoride stream to alkylate alkyl fluorides present in said effluent. This substantially pure HF stream is supplied from (1) a catalyst regeneration step, (2) HF separated from the cooled hydrocarbon phase and (3) HF separated from an overhead hydrocarbon fraction.

3,755,493
NORMAL PARAFFIN ISOMERIZATION WITH LIQUID PHASE AsF_5/HF CATALYST
John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Dec. 30, 1971, Ser. No. 214,400
Int. Cl. C07c *5/28*
U.S. Cl. 260—683.68 9 Claims

Normal paraffins are isomerized to skeletal isomers containing the same number of carbon atoms by contacting paraffins with a liquid mixture of arsenic pentafluoride (AsF_5) and HF. For extended reaction periods, hydrogen is employed to suppress cracking.

3,755,494
PROCESS FOR CLARIFYING GUMS
Stephen J. Chinnock, Pearl River, and Paul A. Kirkpatrick, New Rochelle, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Apr. 2, 1971, Ser. No. 130,834
Int. Cl. C08c *3/00, 17/00*
U.S. Cl. 260—816 5 Claims

Natural gums and natural gum bases are purified or clarified by heating a suspension of said gums in glycerol to effect separation of the gum into an upper layer and settling precipitous matter into the lower layer of glycerol, whereupon the heated admixture is centrifuged to remove the glycerol and precipitated impurities concurrently from the clarified gums.

3,755,495
PARTICLE PROCESS FOR REACTING AN OLEFIN POLYMER WITH A POLYMERIZABLE COMPOUND
Albert E. Schrage, 365 Park Ave., East Orange, N.J. 07017, and Philip D. Readio, 219 W. Lake Shore Drive, Rockaway, N.J. 07866
No Drawing. Original application Oct. 16, 1970, Ser. No. 81,526. Divided and this application Sept. 1, 1971, Ser. No. 177,143
Int. Cl. C08f *29/10, 35/06;* C08g *47/10*
U.S. Cl. 260—827 9 Claims

A process has been developed for directly producing a modified polyolefin composition in particulate form which has improved adhesiveness. Generally, the process comprises providing an olefin polymer in particulate form; admixing the olefin polymer, an organic peroxide and a specific polymerizable compound having the general formula

$$CH_2=\underset{\displaystyle R^1}{\overset{|}{C}}-(R)_{0-1}-Si(R')_3$$

reacting the mixture in an inert atmosphere at a temperature below the tacky point of the polymer; and directly recovering the modified polyolefin composition.

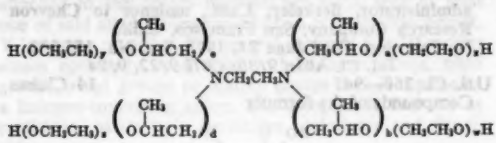
3,755,496
COATING COMPOSITIONS
Shun Koizumi, Toyonaka, Takeshi Suzuki, Kyoto, and Chuzo Okuno, Takatsuki, Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka-shi, Japan
No Drawing. Filed July 1, 1971, Ser. No. 159,038
Int. Cl. C08g *45/04*
U.S. Cl. 260—836 8 Claims

In a pigmented coating composition containing organic liquid medium having dispersed therein a polyvinyl fluoride polymer and pigment, the improvement where in said composition are incorporated an aliphatic polyol having 2 to 15 carbon atoms and 2 to 8 alcoholic hydroxyl groups, an organic antioxidant having a boiling point of higher than the melting point of the vinyl fluoride polymer and 0.5 to 30 weight percent of a glycidyl methacrylate polymer, based on the weight of the vinyl fluoride polymer.

3,755,497
ANTISTATIC POLYESTER FIBER CONTAINING POLYETHER
Gene C. Weedon, Richmond, and Lamberto Crescentini, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Original application Apr. 30, 1970, Ser. No. 33,530. Divided and this application Sept. 15, 1971, Ser. No. 180,907
Int. Cl. C08g *39/10*
U.S. Cl. 260—860 5 Claims

It has been found that an antistatic fiber of polyamide, polyester, polyurea, polyurethane or polysulfonamide can

be prepared by uniformly dispersing between about 1 percent and about 12 percent by weight of a compound represented by the formula:



where *a*, *b*, *c*, *d*, *w*, *x*, *y*, and *z* are each a whole number and the total of *a*, *b*, *c*, and *d* is between 8 and 850 and the total of *w*, *x*, *y*, and *z* is between 8 and 1,000. The compound has a molecular weight between about 4,000 and 135,000 and the ethylene oxide moiety makes up 10 to 90% of the molecular weight of the compound.

3,755,498

TEXTILE FIBER COMPRISING AN ADMIXTURE OF A POLYESTER AND AN ADDITION POLYMER HAVING A TRIBROMONEOPENTYL GROUP IN THE REPEATING UNIT OF THE ADDITION POLYMER

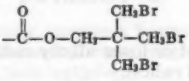
William C. Dickason, Dale E. Van Sickle, and John M. McIntire, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 9, 1972, Ser. No. 224,992

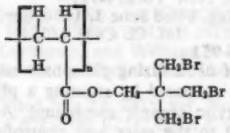
Int. Cl. C08g *39/10*

U.S. Cl. 260—873 **6 Claims**

Disclosed are flame retardant textile fibers comprising an admixture of a polyester and an addition polymer having the



group as a portion of the polymer unit. The polyester is derived from at least 90 mole percent terephthalic acid and at least 90 mole percent ethylene glycol, tetramethylene glycol, or 1,4-cyclohexanedimethanol. The addition polymer preferably comprises at least 95 mole percent units of the structure



The texile fibers of this invention are flame retardant and exhibit a desirable and unobvious combination of other properties necessary in a commercially acceptable textile fiber.

3,755,499

POLYESTER-HIGH POLYMER SYNTHETIC PAPER FOR WRITING

Ichio Heijo, Sigehiro Wakamatsu, Hideki Wada, and Hiroshi Nagamatsu, Nagahama, Japan, assignors to Mitsubishi Jushi Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed May 24, 1971, Ser. No. 146,446

Claims priority, application Japan, May 26, 1970, 45/44,521

Int. Cl. B43l *1/12*; C08g *39/10*

U.S. Cl. 260—873 **5 Claims**

Synthetic writing sheet made from a linear polyester and a high polymer having a higher glass transition point than that of the linear polyester by mixing them uniformly, forming the polymer mixture into film, and stretching the film.

3,755,500

POLYOLEFIN COMPOSITIONS COMPRISING POLYMERIZED 4-METHYL-PENTENE-1

Keith Jasper Clark, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of application Ser. No. 457,824, May 21, 1965. This application Jan. 22, 1970, Ser. No. 6,019

Claims priority, application Great Britain, May 27, 1964, 21,958/64; Aug. 4, 1964, 31,604/64; Apr. 15, 1965, 16,271/65

Int. Cl. C08f *15/04*

U.S. Cl. 260—878 R **19 Claims**

A polymeric composition of 4-methyl pentene-1 having dispersed through it a small proportion of polymerized units of an aliphatic olefin, the homopolymer of said aliphatic olefin having a melting point above 275° C., preferably above 320° C. The composition may also include units of a linear 1-olefin having 4 to 18 carbon atoms. The composition is prepared by sequential polymerization of 4-methyl pentene-1 and the aliphatic olefin. The composition may be moulded into articles having a mean spherulite size of less than 5 microns, which, if the polymer has a low ash content, may have a light transmission in ⅛" section of at least 90%.

3,755,501

PHOSPHATE OR PHOSPHITE ESTERS OF S-(2-HYDROXYALKYL)PHOSPHORODITHIOATES

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation

No Drawing. Original application June 3, 1968, Ser. No. 733,815, now Patent No. 3,544,465. Divided and this application June 25, 1970, Ser. No. 49,983

Int. Cl. C07f *9/18*; C10m *1/48*

U.S. Cl. 260—928 **8 Claims**

Novel esters of O,O-diorgano - S - (2 - hydroxyalkyl) phosphorodithioates are excellent antioxidants and corrosion inhibitors in industrial fluid compositions. This application is specifically concerned with ester prepared from the phosphorodithioate and a phosphorus-containing compound.

3,755,502

BLENDS OF POLYOLEFINS WITH ISOBUTENE-DIPENTENE COPOLYMER AND FILMS THEREFROM

Edward M. Bullard, Rochester, N.Y., assignor to Mobil Oil Corporation

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,145

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 A **2 Claims**

A normally solid resinous blend composition, adaptable for fabrication into oriented film structures having improved physical properties, comprising a thermoplastic resin including polyolefins such as polypropylene and blends of polypropylene with other polyolefinic materials including copolymers, having incorporated therein additive amounts, on the order of from about 5% to about 40% by weight of a copolymer of dipentene and isobutene.

3,755,503

PHOSPHATE ESTERS OF OXYPROPYLATED AMINES

James R. Stanford, Sugar Land, and Paul G. Vogelsang, Jr., Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Original application Nov. 25, 1969, Ser. No. 879,940. Divided and this application Mar. 4, 1971, Ser. No. 121,207

Int. Cl. C07f *9/08*; C02b *5/06*

U.S. Cl. 260—929 **7 Claims**

Phosphated oxypropylated amines obtained by reacting polyphosphoric acid or phosphorus pentoxide or mixtures

thereof with oxypropylated amines, with or without neutralization, are prepared and are useful as scale inhibitors for calcium, barium and magnesium salts in waters.

3,755,504

BUTANE-1,2,3,4-TETRAPHOSPHONIC LOWER ALKYL ESTERS AND PROCESS FOR SAME

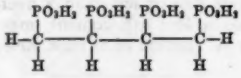
D. Allan Nicholson, Springfield Township, Hamilton County, and Darrel Campbell, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Original application Dec. 27, 1967, Ser. No. 694,003. Divided and this application Aug. 26, 1970, Ser. No. 67,200

Int. Cl. C07f 9/40; C11d 1/12

U.S. Cl. 260—932 **6 Claims**

A class of vicinal polyphosphonates, butane-1,2,3,4-tetraphosphonates are prepared by reacting a butyne compound such as 2-butyne-1,4-diol, a hydrogen dialkyl phosphite, and an alkali metal promoter such as sodium at a temperature of about 20° C.–100° C. for from about 30 minutes to about 60 hours. The novel class of compounds consist of butane tetraphosphonic acid,



lower alkyl esters, and alkali metal salts thereof. The compounds are useful as detergency builders, sequestering agents and anti-calculus agents in oral compositions.

3,755,505

O,O-DIALKYL S(2-[3-(SUBSTITUTED)UREIDO] ETHYL)PHOSPHORODITHIOATES

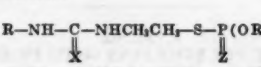
Herman O. Senkbeil and D. Wendell Osborne, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 3, 1970, Ser. No. 43,188

Int. Cl. C07f 9/16; A01n 9/36

U.S. Cl. 260—938 **9 Claims**

The present invention is directed to novel O,O-dialkyl S - (2 - [3 - (substituted)ureido]ethyl)phosphorodithioates of the formula:



wherein R represents

a lower alkyl group of from 1 to about 3, inclusive, carbon atoms, or a benzyl radical; Y represents chlorine, bromine, hydrogen, methoxy, lower alkyl, nitro, or α,α,α-tri-fluoromethyl; *n* represents an integer of 1, 2 or 3; X and Z each independently represent oxygen or sulfur, and R′ represents a lower alkyl group of from 1 to about 3, inclusive, carbon atoms. The compounds of the present invention are useful as insecticides and fungicides.

3,755,506

PHOSPHORYL CYANODITHIOIMIDO CARBONATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,857. Divided and this application Apr. 23, 1971, Ser. No. 137,000

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—940 **11 Claims**

Novel phosphoryl cyanodithioimido carbonates are disclosed. The compounds are useful as insecticides, particularly as soil insecticides.

3,755,507

O,O-DIHYDROCARBYL-N-ALKYLTHIO- OR N-ARYLTHIO PHOSPHOROAMIDOTHIOATE

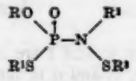
Melancthon S. Brown, deceased, by Gustave K. Kohn, administrator, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 21, 1971, Ser. No. 155,292

Int. Cl. A01n 9/36; C07f 9/22, 9/24

U.S. Cl. 260—947 **14 Claims**

Compounds of the formula



wherein R and R^1 are independently alkyl, alkenyl or alkynyl; R^2 is hydrogen, alkyl or —SR^3; and R^3 is alkyl optionally substituted with halogen atoms or aryl optionally substituted with alkyl groups or halogen atoms. The compounds are insecticides.

3,755,508

S,S-DI(2-ALKOXY-ETHYL) PHOSPHORO- OR PHOSPHONO-THIONODITHIOLATES

Shigeo Kishino, Akio Kudamatsu, and Kozo Shiokawa, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

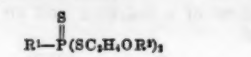
No Drawing. Filed Sept. 7, 1971, Ser. No. 178,488

Claims priority, application Japan, Sept. 9, 1970, 45/78,493

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—950 **8 Claims**

S,S-di(2-alkoxy-ethyl) phosphoro-or phosphono-thionodithiolates of the general formula



(I)

wherein:

R^1 is a lower alkyl or lower alkoxy radical, and
R^2 is a lower alkyl radical,

which possess insecticidal, acaricidal and nematocidal properties.

3,755,509

PHOSPHORUS ACID ESTERS

Leslie G. Nunn, Jr., Metuchen, and Leslie M. Schenck, and Robert E. Leary, Union, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed June 1, 1970, Ser. No. 42,537

Int. Cl. C07f 9/08

U.S. Cl. 260—951 **1 Claim**

A process of neutralizing phosphate esters is described. The esters are prepared by reacting a phosphating agent with a hydroxylic organic compound. A lower alkylene oxide is added to the ester and controlled temperatures and under anhydrous conditions to achieve the desired degree of neutralization. The neutralized esters have surface active qualities.

3,755,510

O OR S ARYL-N,N′,N″ HEXAALKYL PHOSPHONIUM SALTS AND THEIR METHOD OF PREPARATION

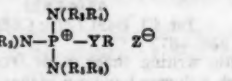
David Cheong King Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,415

Int. Cl. A01n 9/36; C07f 9/54

U.S. Cl. 260—959 **19 Claims**

Compounds of the formula



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are individually alkyl of 1 to 6 carbon atoms or cycloalkyl of 3 to 6 carbon atoms with the proviso that R_1, R_2, or R_3, R_4, or R_5, R_6

may be joined to form a linear alkylene radical of 4 to 6 carbon atoms which is bound to the nitrogen to form a ring, and with the further proviso that when both groups attached to any amido nitrogen are alkyl, then at least one of said alkyl groups must have a primary attachment, Y is oxygen or sulfur, R is an aryl group of 6 to 10 carbon atoms optionally substituted with halogen atoms, nitro groups, alkyl groups or alkoxy groups and Z represents a halogen-containing anion. The compounds find use as pesticides, particularly herbicides, defoliants and fungicides.

3,755,511

HALOALKOXY- AND HALOALKYLTHIO- PHENYL PHOSPHATES, PHOSPHOROTHIOATES AND PHOSPHORODITHIOATES

Lennon H. McKendry, Eric R. Larsen, and Fred Y. Edamura, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,684
Int. Cl. A01n *9/36;* C07f *9/12, 9/18*
U.S. Cl. 260—951 17 Claims

Novel haloalkoxy- and haloalkylthio- phenyl phosphates, phosphorothioates and phosphorodithioates corresponding to the formula:

wherein

each X independently represents hydrogen, bromo, chloro or fluoro, with the previso that at least one X is always bromo, chloro or fluoro;

Y, Y′ and Z each independently represents oxygen or sulfur;

each M independently represents bromo, chloro, fluoro-, iodo, nitro or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive;

a represents an integer of from 0 to 3, both inclusive, and

each R independently represents loweralkyl containing from 1 to about 4 carbon atoms, both inclusive. The novel compounds of the present invention are suitable for use as insecticides, fungicides and herbicides.

3,755,512

3-DIALKOXYPHOSPHORYLTHIO-ACRYLAMIDES AND RELATED COMPOUNDS

Horst O. Bayer, Levittown, and William S. Hurt, Norristown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed July 12, 1971, Ser. No. 162,009
Int. Cl. C07f *9/06, 9/16;* C07d *87/46*
U.S. Cl. 260—970 17 Claims

A novel method for preparing 3-dialkoxyphosphorylthio and 3-dialkoxythionophosphorylthio-acrylamides, crotonamides, methacrylamides and related compounds which consists of opening a 3-isothiazolone ring with a dialkyl phosphite or an O,O-dialkyl thionophosphite in the presence of a basic catalyst.

3,755,513

PRODUCTION OF POROUS UO_2 CONTAINING CERAMIC OXIDE FUEL

Wolfgang Stoll and Hartmut Kroll, Hanau am Main, Germany, assignors to NUKEM/Nuklear-Chemie und-Metallurgie, GmbH, Wolfgang near Hanau am Main, Germany

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,192
Claims priority, application Germany, Jan. 15, 1969 P 19 01 788.0
Int. Cl. G21c *21/02*
U.S. Cl. 264—0.5 12 Claims

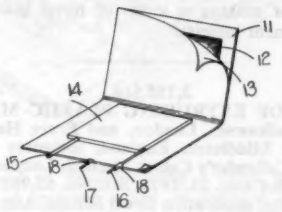
Ceramic oxide sintered materials are prepared from uranium dioxide or mixtures containing uranium dioxide as the primary component by dry mixing a powder of thermally decomposable compounds of definite particle distribution at temperatures up to 600° C. with uranium dioxide, plutonium dioxide or thorium dioxide or mixtures of these oxides and finally without dewaxing treatment are further worked to molded and sintered products of lower density. The preferred additive is ammonium uranyl carbonate.

3,755,514

METHOD OF MAKING PRIMARY METAL-AIR BATTERIES

Derek Roger Bennett, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 30, 1972, Ser. No. 239,585
Claims priority, application Great Britain, Apr. 27, 1971, 11,511/71
Int. Cl. B29c *6/00*
U.S. Cl. 264—23 6 Claims



A method of manufacturing a primary metal-air battery comprises starting with a plurality of electrically connected metal-air battery cells, each of which includes a pair of electrically connected air electrodes positioned on opposite sides respectively of a metal anode and insulated therefrom. Each air electrode includes catalyst material supported on a sheet of porous material, with each pair of sheets of porous material being joined together at their peripheries to define a cell compartment, and with a removable pin extending into each cell compartment and projecting from the peripheries of the pair of sheets defining the respective cell compartment. The cells are positioned in a mould with the removable pins being received in respective holes in the mould and a settable compound is introduced into the mould. The compound is then allowed to set so as to form a body extending between and joining adjacent cells, and the pins are removed from their respective cells so as to leave apertures in the body through which electrolyte can be introduced into the cell compartments respectively of the battery.

3,755,515

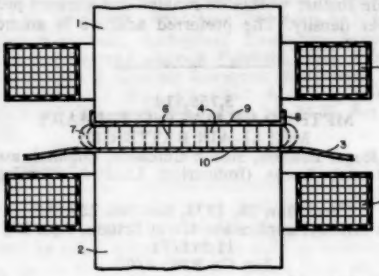
UTILIZING A MAGNETIC FIELD TO RESTRAIN A FERRITE SLURRY DURING PRESSURE FILTRATION AND PARTICLE ORIENTATION

Philip A. Cochardt, Alexander R. Cochardt, and Alexander W. Cochardt, Export, Pa., assignors to Community Building Association of Washington, Indiana, Inc.

Filed Oct. 15, 1970, Ser. No. 80,941
Int. Cl. B28b *5/02;* C04b *33/28, 35/26*
U.S. Cl. 264—24 11 Claims

Highly oriented green ferrite bodies are pressed from a ferrite slurry on a filter cloth between the pole faces of an electromagnet without the use of a restraining oil. Portions of the green ferrites are sintered into superior, anisotropic

ferrite permanent magnets. The magnets can be crushed into a powder, and the powder can be mixed with a plastic binder for making a series of novel plastic-bonded ferrite permanent magnets.

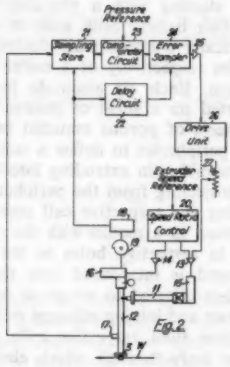


3,755,516

METHODS OF EXTRUDING PLASTIC MATERIAL

Zbigniew Bonikowski, London, and Bruce Henry Keen, Hounslow, Middlesex, England, assignors to British Insulated Callender's Cables Limited, London, England

Filed Aug. 21, 1970, Ser. No. 65,980
Claims priority, application Great Britain, Aug. 25, 1969, 42,224/69
Int. Cl. B29d *27/00;* **B29f** *3/00*
U.S. Cl. 264—40 **11 Claims**



The rate of feed of plastic material into a screw extruder is controlled in accordance with the internal pressure at at least one point along the extruder barrel by sampling the pressure measurement at one point in, or at each of several spaced points along, the extruder barrel at intervals under the control of a timing device driven by the extruder screw in such a way that each sample is taken from the same part of the pressure cycle. Pressure samples are compared with a reference signal to produce an error signal when the value of one or more pressure samples deviates from a desired value. These error signals, which may themselves be sampled under the control of the timing device to avoid hunting, are caused to adjust the rate of feed of material to the extruder, e.g. from a second screw extruder, to restore the pressure to the desired value.

3,755,517

METHOD OF MAKING POROUS APPLICATOR STRUCTURES

John J. Clancy, Westwood, John W. Rafferty, Marblehead, and Robert C. Wells, Arlington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Original copending application Jan. 19, 1968, Ser. No. 699,243, now abandoned. Divided and this application Dec. 30, 1970, Ser. No. 102,960
Int. Cl. B29d *27/04, 27/08*
U.S. Cl. 264—41 **13 Claims**

A method for making a porous structure and the resulting product capable of retaining a liquid and releasing it at a controlled rate with the application of pressure. The porous material is particularly well suited, by virtue of a resin binder gradient across its thickness, to the rapid, easy formation of self-linking stamps. The resulting stamps are capable of forming fine printed lines with high fidelity of outline.

3,755,518

PRODUCTION OF FLEXIBLE AND RESILIENT FOAMED PLASTICS

Fritz Stastny, Ludwigshafen, Rudolf Gaeth, Limburgerhof, and Heinz-Hermann Koerner, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 28, 1970, Ser. No. 41,531
Claims priority, application Germany, May 31, 1969, P 19 27 844.5
Int. Cl. B29d *27/04;* **B29h** *3/02;* **B32b** *25/02*
U.S. Cl. 264—46 **5 Claims**

Production of flexible and resilient foamed plastics by foaming a vulcanizable latex, mixing the foamed product with expanded particles of an olefin polymer, filling the mixture into a mold, heating the mixture therein to a temperature of from 70° to 150° C., removing the flexible and resilient foam therefrom and drying said foam. The flexible and resilient foamed plastics are used as upholstery padding, for thermal insulation and as shock-absorbing materials.

3,755,519

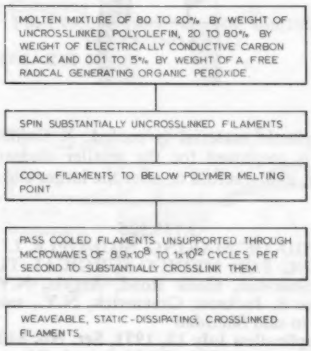
PROCESS FOR THE PREPARATION OF WEAVABLE CROSSLINKED AND CARBON FILLED POLYOLEFIN FILAMENTS

William N. Meyers and Miller C. Hawkins, Raleigh, N.C., assignors to Beaunit Corporation, New York, N.Y.

Original application July 20, 1970, Ser. No. 56,255. Divided and this application Sept. 21, 1971, Ser. No. 182,407
Int. Cl. B29c *25/00*
U.S. Cl. 264—26 **4 Claims**

Weavable, crosslinked polyolefin filaments containing therein adequate amounts of carbon black to dissipate electrostatic charges are prepared by (1) extruding substantially uncrosslinked compositions comprising from

about 20 to 80 percent by weight of a polyolefin, from about 80 to 20 percent by weight of electrically conductive carbon black and small amounts of an organic peroxide to form substantially uncrosslinked filaments; (2) cooling the resulting substantially uncrosslinked filaments to a temperature below the melting point of the polyolefin; (3) supporting the cooled filaments; and thereafter (4) passing the cooled substantially uncrosslinked filaments through a field of microwaves, while said filaments are unsupported therein, for an interval during which the temperature of said filaments is raised to at least the decomposition temperature of the peroxide and to at least the melting point of the polyolefin and for a period sufficient to substantially crosslink the compositions and impart weavability thereto. Weavable, static-dissipating, crosslinked and carbon filled polyolefin filaments are obtained having a tenacity of at least 0.3 grams per denier and an elongation of at least 10 percent at break.


MOLTEN MIXTURE OF 80 TO 20% BY WEIGHT OF UNCROSSLINKED POLYOLEFIN, 20 TO 80% BY WEIGHT OF ELECTRICALLY CONDUCTIVE CARBON BLACK AND 0.01 TO 5% BY WEIGHT OF A FREE RADICAL GENERATING ORGANIC PEROXIDE
SPIN SUBSTANTIALLY UNCROSSLINKED FILAMENTS
COOL FILAMENTS TO BELOW POLYMER MELTING POINT
PASS COOLED FILAMENTS UNSUPPORTED THROUGH MICROWAVES OF 8.9×10^{8} TO 1×10^{12} CYCLES PER SECOND TO SUBSTANTIALLY CROSSLINK THEM
WEAVEABLE, STATIC-DISSIPATING, CROSSLINKED FILAMENTS

3,755,520

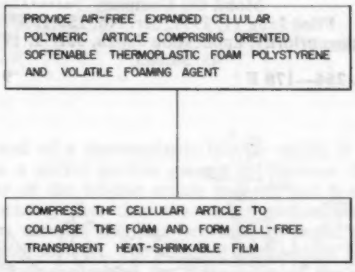
METHOD FOR THE PREPARATION OF TRANSPARENT HEAT SHRINKABLE THERMOPLASTIC POLYMERIC FILM FROM FOAMED THERMOPLASTIC POLYMERIC MATERIAL

Joeph A. Cogliano, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,191

Int. Cl. B29c *25/00*; B29d *7/02, 27/00*

U.S. Cl. 264—53 **6 Claims**


PROVIDE AIR-FREE EXPANDED CELLULAR POLYMERIC ARTICLE COMPRISING ORIENTED SOFTENABLE THERMOPLASTIC FOAM POLYSTYRENE AND VOLATILE FOAMING AGENT
COMPRESS THE CELLULAR ARTICLE TO COLLAPSE THE FOAM AND FORM CELL-FREE TRANSPARENT HEAT-SHRINKABLE FILM

The invention disclosed is directed to a process for making biaxially oriented heat-shrinkable film, which includes providing an expanded cellular plastic article formed of a composition comprising a softenable thermoplastic foam polymer, and compressing the article to collapse the foam to an extent such that the resulting relatively dense film shrinks longitudinally and transversely when heated to above the polymer melting point.

3,755,521

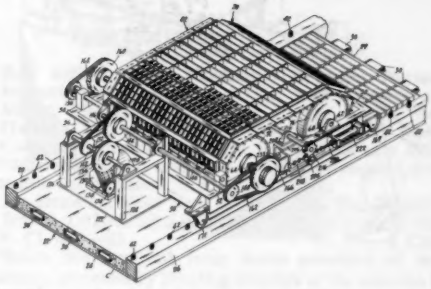
METHOD OF MAKING BRICK PANELS

James M. Young, 3402 W. Wells St. 53208, and George O. Whitney, Milwaukee, Wis. (868 Bayway Blvd., Apt. M-312, Clearwater, Fla. 33515)

Original application Aug. 19, 1968, Ser. No. 753,500. Divided and this application Mar. 25, 1971, Ser. No. 128,123

Int. Cl. B28b *1/08, 1/16*

U.S. Cl. 264—69 **11 Claims**



A method of manufacturing a brick panel includes the steps of forming a bed of concrete, arranging the bricks in a plurality of rows, moving the rows of bricks over the exposed surface of the bed of material, sequentially depositing the rows of bricks in the bed of concrete, and sequentially partially embedding the rows of bricks in the surface of the concrete, as by vibratory blows.

3,755,522

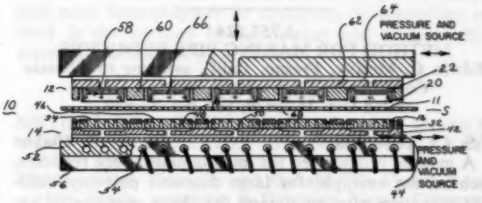
TRIM IN PLACE DIFFERENTIAL PRESSURE THERMOFORMING PROCESS

Bruce T. Jope, Glastonbury, Conn., and Alan R. Phillips, Monson, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation of abandoned application Ser. No. 860,944, Sept. 25, 1969. This application Oct. 1, 1971, Ser. No. 185,679

Int. Cl. B29c *17/04, 17/10*

U.S. Cl. 264—89 **3 Claims**



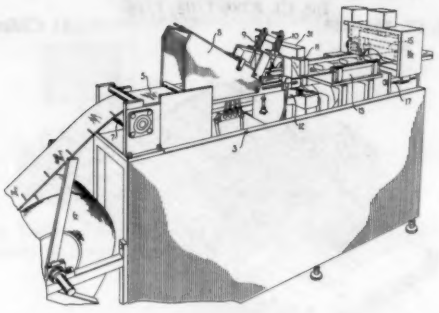
Method for trim in place thermoforming of articles from successive portions of a continuous sheet. Each sheet portion is sealed and a rounded flange formed therein prior to forming the container by advancing a rounded mold portion into an opposing resilient surface with the sheet interposed therebetween, while simultaneously substantially separating each sheet portion from the remainder of the sheet. Separating is by means of a blade which preferably is heated and has depressions in its surface to prevent completely separating each portion from the sheet. The blade may optionally operate against another opposing resilient surface.

3,755,523

METHOD FOR APPLYING EXTRUDED PLASTIC FILMS TO SUBSTRATES

Melvin J. Straub, Minnetonka, and Thomas L. Schuette, Osseo, Minn., assignors to Possis Corporation, Minneapolis, Minn.

Original application July 18, 1969, Ser. No. 842,991, now Patent No. 3,596,432, dated Aug. 3, 1971. Divided and this application Mar. 1, 1971, Ser. No. 119,568
Int. Cl. B29c *17/04;* B29d *7/04*
U.S. Cl. 264—90 3 Claims



A packaging method wherein a web of paperboard is continuously drawn along a defined path, under a loading device by which articles or products to be packaged are successively deposited upon the web to be carried thereby through a curtain or sheet of molten thermoplastic resin which debouches from a downwardly opening nozzle, to lay itself onto and form a covering film on the web and over any articles or products thereon. The mouth of the nozzle is a slit which extends transversely across the path of the web and is arched to have its ends close to the web while its mid-portion is spaced much farther from the web. The film covered web then travels across a vacuum chamber by which any space between the covering film and the web is evacuated and the film drawn tightly over the articles or products and against the web. A series of closely spaced parallel rollers across the top of the vacuum chamber with their axes transverse to the web supports the web, and certain of the rollers are driven to draw the web through the machine. Beyond the vacuum chamber, the web with the covered articles or products thereon enters a guillotine type cutoff station where it is cut into discrete units each of which is a complete package.

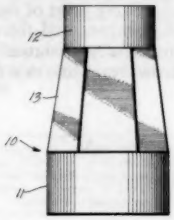
3,755,524

METHOD FOR MAKING PIPE REDUCERS

Edwin C. McKay, Fresno, Calif., assignor to Climate Conditioning Corporation, Stanton, Calif.

Filed Oct. 26, 1970, Ser. No. 83,920
Int. Cl. B29c *17/02*
U.S. Cl. 264—138 2 Claims

A method is described for making plastic pipe reducers, such as, for example, for large diameter polyvinyl chloride irrigation pipe employing the shape memory of extruded plastic irrigation pipe to full advantage. An appropriate length of extruded plastic pipe having a diameter approximately that of the smaller reducer diameter is cut from a length of extruded plastic pipe. A sufficient length of the cut piece to form the larger diameter end and the transition to the smaller diameter end is heated to the softening temperature of the thermoplastic material. Longitudinally extending fingers are forced radially outwardly to expand the length of pipe polygonally into the transition portion, and the pipe is cooled in its expanded condition. A circular mold having an outside diameter the same as the relatively larger inside diameter of the reducer is inserted in the expanded end, and that portion adjacent the mold is heated to the softening temperature of the plastic so that the shape memory of the plastic shrinks the material onto the mold. The mold is removed



after the plastic material is cooled. A similar molding technique is employed for the smaller diameter end of the reducer, either before or after the larger end is formed.

3,755,525

METHOD OF MAKING MULTIPLE LUMEN TUBING FOR MEDICO-SURGICAL TUBES

David S. Sheridan, Hook Road, Argyle, N.Y. 12809, and Isaac S. Jackson, Greenwick, N.Y., said Jackson assignor to said Sheridan

Original application July 12, 1971, Ser. No. 860,278, now Patent No. 3,625,793. Divided and this application July 12, 1971, Ser. No. 161,877
Int. Cl. B29d *23/04;* B29c *17/00*
U.S. Cl. 264—167 1 Claim

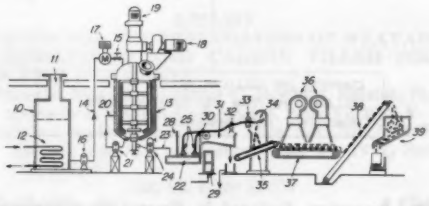
Multiple lumen tubing for use in medico-surgical tubes that have an arcuate shape, e.g., endotrachael tubes, are formed by extrusion and then wound on a drum with the secondary lumen facing the drum. The tubing and drum are then stored for at least 10 minutes at an elevated temperature, after which the tubing is cooled while still wound on the drum. Finally, the cooled tubing is removed from the drum and cut into desired lengths to make the medico-surgical tubes.

3,755,526

METHOD OF FORMING THERMOPLASTICS

Kazuo Watanabe, Yokohama, Japan, assignor to Mobil Oil Company

Filed June 11, 1971, Ser. No. 152,133
Claims priority, application Japan, July 1, 1970, 45/56,885
U.S. Cl. 264—178 F 9 Claims



Apparatus and process are described for forming thermoplastic materials into rods for shipment and use in hot melt coating equipment. The system of extrusion through

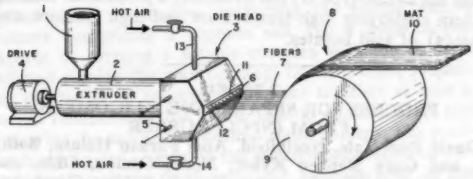
electrically heated nozzles to a water bath is particularly applicable to hot melts which are blends of petroleum waxes and polymeric materials, which blends have relatively high melting point and tensile strength.

3,755,527

PROCESS FOR PRODUCING MELT-BLOWN NONWOVEN SYNTHETIC POLYMER MAT HAVING HIGH TEAR RESISTANCE

James P. Keller, James S. Prentice, and John W. Harding, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Oct. 9, 1969, Ser. No. 865,105
Int. Cl. D01d 5/12
U.S. Cl. 264—210 F 14 Claims



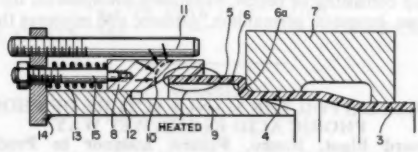
A highly tear resistant nonwoven mat of thermoplastic polymer fibers is made in a melt-blowing process in which a molten polymeric resin is extruded through a row of die openings into a stream of hot gas which attenuates the resin into fibers having diameters between about 10–40 microns. The fibers are collected on a continuously moving surface positioned from about 10 to about 30 inches from the die openings.

3,755,528

METHOD FOR MAKING TUBULAR ARTICLES FROM A THERMOPLASTIC MATERIAL

Johann Gütlhuber, Irlbach, Robert Heitzer, Bogen, and Ludwig Neueder, Strasskirchen, Germany, assignors to Kunststoffwerk Gebruder Anger GmbH

Continuation-in-part of application Ser. No. 845,263, July 28, 1969. This application Sept. 13, 1971, Ser. No. 180,214
Int. Cl. B29b 3/00
U.S. Cl. 264—322 6 Claims



The end of a thermoplastic tubular article is molded to form a socket portion greater in diameter than the diameter of the tubular article and the end is enlarged to diameter greater than the socket portion with there being an annular shoulder between the socket and enlarged end portions. The enlarged end portion is heated to thermoelasticity and the outer edge of the enlarged end is drawn inwardly while the enlarged diameter end portion is restrained against outward radial movement and the socket portion restrained against both inward and outward radial movement. The extent of inward axial movement of the outer edge will determine the configuration of the annular corrugation formed in the enlarged end.

3,755,529

RAPIDLY DISSOLVING ACID COMPOSITION

Basil A. Procyk, Moon Township, Pa., assignor to United States Steel Corporation

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,424
Int. Cl. B01f 3/12, 3/20
U.S. Cl. 252—363.5 4 Claims

Sodium monooctyl sodium sulfosuccinate and a wetting agent are added to fumaric and other difficultly soluble acids to increase their rate of solubility in water. The wetting agent used is sodium lauryl sulfate, sodium lauryl monoglyceride sulfonate, polyoxyethylene sorbitan stearate, tallow oxyethylated sucrose or coconut oxyethylated sucrose.

3,755,530

PROCESS FOR TREATMENT OF WASTE SOLUTIONS

Arthur Julian Avila, Naperville, Ill., and Raymond Edward Jaeger, Basking Ridge, and Thomas John Miller, Piscataway, N.J., and Harold Alfred Sauer, Hatboro, Pa.; said Avila, assignor to Western Electric Company, Incorporated, New York, N.Y., said Jaeger, Miller and Sauer, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

No Drawing. Filed Nov. 24, 1971, Ser. No. 202,017
Int. Cl. C01g 3/00, 5/00, 7/00, 51/00, 53/00, 55/00
U.S. Cl. 423—22 5 Claims

Solids are removed from waste solutions of metal finishing processes by injecting droplets of the solution into a refrigerant to quick-freeze them, followed by removal of ice by sublimation in a controlled vacuum. The solids may then be incinerated to decompose metallic salts and in particular toxic materials such as cyanides to leave a residue which may be rich in precious or costly nonprecious metals or their oxides, such as gold, silver or copper oxide. These metals may be recycled, while the sublimed water may be either condensed and reused or discarded.

3,755,531

PROCESS FOR REFINING ALUMINA

Masahiro Tsukawaki and Yoshiaki Inamoto, Wakayamashi, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,303
Claims priority, application Japan, Aug. 24, 1970, 45/74,013
Int. Cl. C01f 7/06
U.S. Cl. 423—121 4 Claims

A crude alkali aluminate solution obtained by extracting aluminum from aluminum-containing ores with caustic alkali solution is added with an emulsion of a polyacrylic acid ester homopolymer or copolymer to precipitate red mud in the solution by flocculaton and to give alkali aluminate solution of good clarity.

3,755,532

METHOD OF MAKING NaF OR NaF/AlF_3 INVOLVING THE REACTION OF SODIUM SULFATE WITH FLUOSILICIC ACID

Maurice Clark Harrison and Donald Otis Vancil, Longview, Wash., assignors to Reynolds Metals Company, Richmond, Va.

No Drawing. Original application Aug. 7, 1970, Ser. No. 62,129. Divided and this application June 7, 1972, Ser. No. 260,588
Int. Cl. C01f 7/54, 7/50; C01d 3/02
U.S. Cl. 423—116 1 Claim

A sodium fluoride-aluminum fluoride double salt, such as chiolite, of high purity and virtually free from CaO and P_2O_5 contamination, is prepared from impure fluosilicic acid containing these impurities, such as the by-product from the manufacture of phosphates from phosphate rock, by treating a portion of the fluosilicic acid with a reactive aluminous material to convert it completely to AlF_3, and separating the precipitated CaO,

P_2O_5, and silica, reacting a second portion of the fluosilicic acid with sodium sulfate to form sodium fluosilicate substantially free of CaO and P_2O_5 decomposing the fluosilicate to sodium fluoride; admixing aqueous solutions of the AlF_3 and NaF at about 140° F.–190° F. while maintaining the pH between about 3.0 and 6.8 to keep SiO_2 in solution, and recovering the precipitated double salt.

3,755,533

SEPARATION AND RECOVERY OF INORGANIC LITHIUM SALTS FROM OTHER METAL SALTS

Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Linden, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 808,328, Mar. 18, 1969. This application Nov. 26, 1971, Ser. No. 202,645

Int. Cl. C01a *1/28*

U.S. Cl. 423—181 6 Claims

Inorganic lithium salt mixtures are separated into components as well as inorganic lithium salts are separated from other metal salts by complexation with a monomeric or polymeric organic chelating agent. The salt may be recovered thereafter by destabilization of the complex. The chelating agent is a secondary or tertiary polyamine or aminoether.

3,755,534

CATALYTIC CONTROL OF AUTO EXHAUST EMISSIONS

James R. Graham, Columbia, Md., assignor to W. R. Grace & Co.

Filed Aug. 12, 1971, Ser. No. 171,152

Int. Cl. B01d *53/34*

U.S. Cl. 423—213.7 4 Claims

A method of converting the noxious components of auto exhaust gases to innocuous entities by contacting the gases with a palladium catalyst on a suitable support followed by passing the gases over a catalyst active for hydrocarbon conversion on a suitable support. The use of this particular configuration results in improved conversion of the carbon monoxide and hydrocarbons in the exhaust gases.

3,755,535

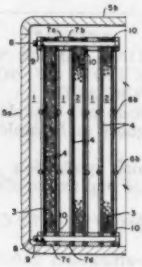
PROCESS FOR THE REMOVAL OF SULFUR TRIOXIDE FROM INDUSTRIAL OFF-GASES

Jaap E. Naber, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 16, 1971, Ser. No. 180,959

Int. Cl. B01j *11/00*; C01b *17/02, 17/68*

U.S. Cl. 423—244 15 Claims



A process for removing sulfur trioxide from industrial off-gases containing sulfur oxides by contacting the gases at an elevated temperature with a solid acceptor comprising an inorganic oxide which is substantially free of deposited metals or metal compounds, and regenerating the loaded acceptor with a hydrogen sulfide-containing gas. Optionally, the sulfur compounds in the off-gases may first be oxidized to sulfur trioxide prior to contacting with the solid acceptor.

3,755,536

ISOTYPIC BORATES OF ALUMINUM, RHODIUM AND THALLIUM OF CALCITE-TYPE CRYSTAL STRUCTURE

Tom Allen Bither, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 27, 1971, Ser. No. 166,622

Int. Cl. C01b *35/00*

U.S. Cl. 423—279 5 Claims

Disclosed herein are isotypic borates of aluminum, $AlBO_3$, rhodium, $RhBO_3$, and thallium, $TlBO_3$, each having the calcite-type crystal structure; a process for making them employing high temperature and high pressure and use(s) of said borates.

3,755,537

PROCESS FOR SEPARATING OLIGOMERS FROM ($NPCl_2$) RUBBER

David Paul Tate, Northfield, Adel Farhan Halasa, Bath, and Gary Stephen Kyker, North Canton, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 29, 1971, Ser. No. 194,020

Int. Cl. C01b *25/10*

U.S. Cl. 423—300 6 Claims

This invention relates to the preparation of purified phosphazene rubbers.

3,755,538

PREPARATION OF ZEOLITES

Edwin W. Albers, Annapolis, Grant C. Edwards, Silver Spring, and David E. W. Vaughan, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,858

Int. Cl. C01b *33/28*

U.S. Cl. 423—329 12 Claims

Crystalline zeolites are prepared by reacting precursor mixtures of silica, alumina, alkali metal, hydroxide and water to which have been added a minor quantity of a composition which is highly active for initiation of crystallization of the desired zeolite from the precursor reaction mixture. The composition which is highly active for the production of zeolites comprises a reacted aqueous slurry of alkali metal hydroxide, alumina, silica, water and a minor quantity of an additive selected from the group consisting of boron, vanadium, phosphorus, molybdenum, tungsten, germanium, gallium, and mixtures thereof.

3,755,539

PROCESS FOR THE MANUFACTURE OF PHOSPHORIC ACID IN THE WET WAY

Bernard Bigot, Rouen, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France, and U.C.B. (Union Chimique-Chemische Bedrijven) Brussels, Belgium

Filed Jan. 2, 1970, Ser. No. 250

Int. Cl. C01b *25/16*

U.S. Cl. 423—320 10 Claims

A method of making phosphoric acid and gypsum which comprises forming a first fluid reaction medium comprising the phosphoric acid product of the process, dividing the phosphatic raw material, in powder form, into major and minor fractions, mixing the major fraction with the first fluid reaction medium, mixing more sulfuric acid with the first fluid reaction than is required to react with the phosphatic raw material therein to form gypsum forming a second fluid reaction medium comprising the phosphoric acid product of the process, transferring product formed in the first reaction medium to the second re-

action medium and mixing it therewith, mixing the minor fraction of phosphatic raw material with the second fluid reaction medium, and separating phosphoric acid from the gypsum.

3,755,540

METHOD FOR PREPARING COPPER-EXCHANGED TYPE X ZEOLITE

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 865,979, Oct. 13, 1969. This application Jan. 28, 1972, Ser. No. 221,775

Int. Cl. C01b *33/28*

U.S. Cl. 423—328 **7 Claims**

Copper-exchanged Type X zeolite is prepared by ion-exchanging a sodium Type X zeolite with a copper salt solution, heating the zeolite to effect at least partial dehydration of the zeolite, contacting the zeolite with a mixture comprising a cuprous salt and a hydrocarbon capable of forming a soluble complex with the cuprous salt and passing the pore openings of the zeolite, subjecting the zeolite to reducing conditions to effect at least a partial reduction of the cupric ions to cuprous ions, and hydrating the zeolite to a desired water content. The product is particularly useful in the selective separation of olefinic hydrocarbons from saturated hydrocarbons in the presence of contaminant aromatic hydrocarbons.

3,755,541

METHOD AND DEVICE FOR MANUFACTURING SILICON CARBIDE

Serge Strepkoff, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1968, Ser. No. 769,481

Claims priority, application France, Oct. 23, 1967, 125,392

Int. Cl. C01b *31/36;* **C01j** *1/14*

U.S. Cl. 423—346 **6 Claims**

A method of manufacturing silicon carbide by decomposition of a gas mixture containing a hydrocarbon compound, e.g. propane, a silane, e.g. SiH_4, a carrier gas, e.g. hydrogen, and hydrogen chloride. The concentration of silicon atoms in the mixture is chosen to be between 10 to 50% of the concentration of the carbon atoms.

3,755,542

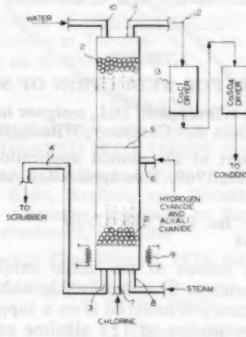
PROCESS FOR THE CONTINUOUS PRODUCTION OF CHLORINE-FREE CYANOGEN CHLORIDE

Yelagondahally S. Suryanarayana, Mobile, Ala., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,457

Int. Cl. C01b *21/52, 31/00*

U.S. Cl. 423—364 **5 Claims**



Cyanogen chloride without detectable chlorine and containing up to 1% of free hydrogen cyanide can be prepared by reaction of chlorine with acidified alkali cyanide or hydrogen cyanide solution in amounts up to 40% excess cyanide over the theoretical amount. The reaction is performed in an apparatus providing an efficient gas-liquid contact as e.g. in a flooded packed column or a sparged gas reactor, to have a quantitative reaction of the chlorine. The reactor liquid effluent is maintained in boiling conditions to minimize its cyanide content.

3,755,543

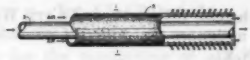
AIR COOLED POROUS METAL PIPE FOR USE IN FEEDSTOCK INJECTION ASSEMBLY

Burton F. Latham, Jr., Houston, Tex., assignor to Continental Carbon Company, Houston, Tex.

Filed Aug. 16, 1971, Ser. No. 171,832

Int. Cl. C01b *31/02*

U.S. Cl. 423—450 **5 Claims**



A porous metal pipe surrounds a fluids conduit which is subjected to high temperatures, so that air can be passed into the annulus between the two pipes and through the porous pipe wall to assist in cooling the oil injection pipe. For example, the oil feedstock pipe in a carbon black reactor is surrounded by a porous metal pipe into which axial air is passed.

3,755,544

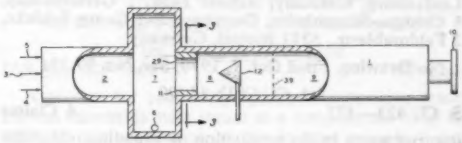
CARBON BLACK PRODUCTION

Thomas J. Gunnell, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 4, 1971, Ser. No. 103,379

Int. Cl. C09c *1/50*

U.S. Cl. 423—456 **6 Claims**



A process and apparatus for producing carbon black in which the property distribution ranges of the individual carbon black particles are narrowed by creating turbulence within the carbon black formation zone.

Carbon black is produced by passing a reactant mass comprising hydrocarbon feed and hot combustion gases into a carbon black formation zone wherein a fluid is introduced to increase the turbulence of the reactant mass. Means for introducing the fluid include a deflector or a conduit having apertures through which the fluid is discharged centrally into the reactant mass and outwardly towards the wall of the reactor.

3,755,545

PROCESS FOR OBTAINING SODIUM AND AMMONIUM FLUORIDE BY THE TREATMENT OF PHOSPHONITRATE SOLUTIONS

Iuliu Virgil Florian Moldovan, Laurentia Cristescu, and Victoria Preda, Bucharest, Rumania, assignors to Institutul DeCercetari Chimice-Icechim, Bucharest, Rumania

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,930

Claims priority, application Rumania, Jan. 15, 1970, 62,137

Int. Cl. C01c *1/16;* **C01d** *3/02*

U.S. Cl. 423—470 **1 Claim**

A process for the recovery of fluorine as sodium fluoride and/or ammonium fluoride from phosphonitrate so-

lutions obtained by the reaction of nitric acid with phosphate rock. Calcium nitrate may be removed from the solution by precipitating it with cooling, whereupon fluorine is precipitated concomitantly with the precipitation of calcium by treating the filtrate or decantate from the separation of calcium nitrate with a quantity of sodium sulfate or sodium carbonate and ammonium sulfate or with sodium carbonate and ammonium sulfate in an excess of 1 to 300% above the stoichiometric quantity necessary for total fluorine removal, separating the resulting precipitate of sodium fluosilicate and calcium sulfate, and treating the precipitate with ammonia to solubilize the precipitate in the form of sodium fluoride and ammonium fluoride solution.

3,755,546

PROCESS FOR REMOVAL OF PHOSPHATES FROM SOLUTIONS CONTAINING FLUORIDE IONS

Bernard M. Lichstein, Elizabeth, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Company, New York, N.Y.

No Drawing. Filed Aug. 31, 1971, Ser. No. 176,718

Int. Cl. C01b *25/32, 33/12;* **C01c** *1/16*

U.S. Cl. 423—470 **7 Claims**

A process for removing phosphate ion from fluoride ion-containing aqueous solution is provided which comprises adding a water-soluble barium salt in the presence of sufficient ammonia to afford a pH of at least 8.5 and separating the thereby precipitated barium phosphate from the solution.

3,755,547

PROCESS FOR THE MANUFACTURING OF VANADIUM CHLORIDES

Ferdinand Langenhoff, 9 Mondorfer-str., 4 5211 Ranzel-Deutz, Germany; Erich Termin, 4 Kraftwerkweg, 7877 Laufenburg, Germany; Arnold Lenz, 7 Gerstenkamp, 5 Cologne-Stammheim, Germany; and Georg Schinke, 2 Feldmuhlestr., 5211 Ranzel, Germany

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,331

Int. Cl. C01b *11/00*

U.S. Cl. 423—472 **4 Claims**

Improvements in the production of vanadium chlorides and/or oxychlorides by the reductive chlorination of vanadium oxides with chlorine in the presence of carbon at elevated temperatures by carrying out the process in a tube reactor, the walls of which are lined with the product produced by flame-hardening or baking to 800 to 1000° C. a mixture of corundum and as a binder the water hydrolysis product of silicon and aluminum alcoholates made by the process disclosed in published German Pat. 1,286,038.

3,755,548

PRODUCTION OF ALUMINUM FLUORIDE

Eberhard Weise, Leverkusen, Manfred Schulze, Opladen, and Manfred Rothert, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

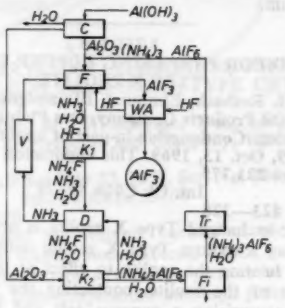
Filed Aug. 11, 1971, Ser. No. 170,733

Claims priority, application Germany, Aug. 14, 1970, P 20 40 412.0

Int. Cl. CO1f *7/50*

U.S. Cl. 423—489 **7 Claims**

Reaction of aluminum oxide and gaseous hydrogen fluoride in a reaction zone in the presence of ammonia at a temperature of 400 to 700° C., condensation of gaseous products formed in said reaction zone, separation of ammonia from resulting condensate, precipitation of ammonium fluoride present in the condensate with reactive aluminum oxide and/or aluminum hydroxide to form



ammonium cryolite, introduction of ammonium cryolite into said reaction zone and recovery of aluminum fluoride product.

3,755,549

CATALYTIC OXIDATION OF SO_2 TO SO_3

Hans Guth, Bergisch-Neukirchen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 25, 1971, Ser. No. 146,713

Claims priority, application Germany, June 2, 1970, P 20 26 818.2

Int. Cl. C01b *17/08*

U.S. Cl. 423—533 **6 Claims**

In the process for producing SO_3 comprising the steps of catalytically oxidizing SO_2 with air to SO_3 in a plurality of contact stages and subjecting the product gases to absorption to remove some of the SO_3 at some stage prior to the last and after an SO_2 conversion of about 80 to 95%, the improvement which comprises incorporating in the SO_2-containing gas prior to its introduction into the first catalyst stage an air stream which has been passed through oleum and thereby picked up SO_3, the proportions being such that the resultant gas fed to the first catalyst stage contains about 2 to 10% by volume of SO_3. The liquid which is used to absorb some of the SO_3 in the product gases prior to the last stage is taken from a common supply with the oleum through which the air stream is passed to pick up SO_3. The SO_2-containing gas can be of 12 to 21% concentration by volume, produced by burning sulfur, and be diluted to 10 to 14% before catalytic oxidation to SO_3; if a roasting or cleavage gas of 12 to 30% SO_2 concentration is used, it may be diluted to 10 to 20%.

3,755,550

PROCESS FOR REDUCTION OF SO_2

Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 818,027, Apr. 21, 1969. This application Aug. 2, 1971, Ser. No. 168,351

Int. Cl. C01b *17/16*

U.S. Cl. 423—564 **5 Claims**

This invention relates to the initial catalytic reduction of sulfur dioxide to hydrogen sulfide with a reducing gas wherein the catalytic material is on a support and the material is a combination of (1) alkaline earth molybdates and (2) a chromite selected from the group of the chromites of cobalt, manganese, copper, cerium, or a mixture of the rare earths containing at least 30% ceri-

um. Space velocities of at least 500 up to over 4000 hr.$^{-1}$ at light-off temperatures of less than 540° C. with the gases reaching equilibrium are practical.

3,755,551

REDUCTION OF SULFUR DIOXIDE

Billy W. Bridwell, Parsippany, Emery J. Carlson, Chatham, Raymond H. Edgecomb, Somerville, and William E. Watson, Tabor, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 809,996, Mar. 24, 1969. This application May 27, 1971, Ser. No. 150,948

Int. Cl. C01b *17/04*

U.S. Cl. 423—570 12 Claims

This invention relates to a method for the reduction of sulfur dioxide by a process which comprises converting the sulfur dioxide to elemental sulfur and/or other gaseous sulfur compounds in the presence of a calcium aluminate catalyst and gaseous hydrocarbon at a temperature within the range from 1500° F. to 2600° F.

3,755,552

PROCESS FOR PRODUCING HYDROGEN PEROXIDE

Nathan Dean Lee, Lambertville, N.J., and Wayne Edwin Schrock, Charleston, W. Va., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,802

Int. Cl. B01j *9/00;* C01b *15/02*

U.S. Cl. 423—588 1 Claim

Process for producing hydrogen peroxide by alternately, catalytically hydrogenating and oxidizing an anthraquinone working solution, wherein hydrogen and the working solution are passed in contact with a hydrogenation catalyst contained in a plurality of substantially vertically oriented cylinders and wherein the ratio of the diameter of each cylinder to the diameter of the catalyst particles is at least 15:1.

3,755,553

METHOD OF PRODUCING SALTS OF ALKALINE EARTH METALS

Sergei Alexeevich Kutolin, ulitsa Demyana Bednogo, 58, kv. 19; Alexandr Ilich Vulikh, ulitsa Demyana Bednogo, 58a, kv. 36; and Anna Egorovna Shammasova, ulitsa Dostoevskogo, 22, kv. 75, all of Novosibirsk, U.S.S.R.

No Drawing. Filed Apr. 18, 1968, Ser. No. 722,192

Int. Cl. C01g *23/00, 33/00, 35/00*

U.S. Cl. 423—598 7 Claims

Alkaline earth metal salts are prepared by heating a charge consisting of alkaline earth carbonates and transition metal oxides at 700–900° C. in an ammonia stream and then in air at 600–750° C.

3,755,554

PREPARATION OF IRON OXIDE AND HYDRATED IRON OXIDE PIGMENTS

Günter Lailach, Krefeld, Fritz Rodi, Kaldenhausen, Heribert Bade, Krefeld, and Heinz Köller, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 25, 1971, Ser. No. 146,787

Claims priority, application Germany, June 13, 1970, P 20 29 300.9

Int. Cl. C01g *49/06*

U.S. Cl. 423—633 3 Claims

Treatment of metallic iron containing material with oxygen containing gases in the presence of an aqueous, slightly acid ferrous salt solution characterized by addition of the metallic iron containing material as a finely divided power into the reaction mixture at a rate maintaining the pH between 1 and 6, preferably between 3 and 6. Modifying substances such as α-FeOOH, γ-FeOOH, δ-FeOOH and α-Fe_2O_3 may be employed.

3,755,555

PRODUCTION OF ALKALI HYDRIDOALUMINATES

Tatyana Nikolaevna Dymova, ulitsa Krasikova, 19, kv. 40, and Mariya Semenovna Roschina, ulitsa Gvardeiskaya, 14, kv. 227, both of Moscow; Nina Grigorievna Eliseeva, ulitsa Glavmosstroya, 7, korpus, 2, kv. 40, Moskovskaya Oblast; and Nikolai Tikhonovich Osipenko, ulitsa Gubkina, 16, korpus, 1, kv. 2, Moscow, U.S.S.R.

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,498

Int. Cl. C01b *6/24*

U.S. Cl. 423—644 7 Claims

A process for the production of alkali hydridoaluminates of the general formula $MAlH_4$ where M is sodium, potassium, rubidium or cesium characterized in that an alkali metal is reacted with aluminum and hydrogen in a melt of said alkali metal-hydridoaluminate, sodium being reacted with aluminium and hydrogen at a temperature of 200 to 350° C. under a pressure of 175 to 300 atm., and potassium, rubidium and cesium being reacted with aluminium and hydrogen at a temperature of 250 to 400° C. under a pressure of 100 to 250 atm.

3,755,556

LOW TEMPERATURE SHIFT REACTION INVOLVING AN ALKALI METAL COMPOUND AND A HYDROGENATION-DEHYDROGENATION COMPONENT

Clyde L. Aldridge, Baton Rouge, La., assignor to Esso Research and Engineering Company

No Drawing. Filed July 7, 1970, Ser. No. 52,997

Int. Cl. C01b *1/05, 1/08*

U.S. Cl. 423—655 17 Claims

A process for producing hydrogen comprising reacting carbon monoxide with steam at a temperature of at least 300° F. in the presence of (1) at least one alkali metal compound derived from acids having ionization constants below 1×10^{-3} and (2) rhenium. The ratio of the rhenium component to the alkali metal compound ranges from 0.001 to about 10 parts by weight of the alkali metal compound. The alkali metal compound may be impregnated on the hydrogenation-dehydrogenation component, Re, or may be mixed with or used in the presence of said component. A suitable combination is a potassium compound such as potassium carbonate mixed with Re_2O_7 on an alumina support.

3,755,557

SPRAY VACCINES

Jan Jacobs, Weesp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,778

Claims priority, application Netherlands, Aug. 29, 1970, 7012832

Int. Cl. A61k *9/00*

U.S. Cl. 424—46 6 Claims

The invention relates to spray vaccines in which the antigen material in a dry form is dispersed in a liquid propellant. The dispersing agent used is not a liquid and at the same time non-ionic compound, but lecithin which is solid and ionic.

3,755,558

POLYLACTIDE-DRUG MIXTURES FOR TOPICAL APPLICATION

Richard M. Scribner, Crestfield, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 23, 1971, Ser. No. 118,081

Int. Cl. A61k *7/00*

U.S. Cl. 424—47 10 Claims

Formulations of polyactide and drug for topical application to the body as films provide a slow sustained release of the drug to the site. The polylactide is biodegradable to normal or essentially normal metabolic products.

3,755,559

HIGH-LATHERING CONDITIONING SHAMPOO COMPOSITION

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 816,395, Apr. 15, 1969. This application Aug. 23, 1971, Ser. No. 174,192

The portion of the term of the patent subsequent to Jan. 16, 1990 has been disclaimed

Int. Cl. A61k *7/08;* C11d *1/84*

U.S. Cl. 424—70 7 Claims

This disclosure relates to a stable, creamy-foam shampoo comprising a tertiary amine oxide, a higher alkyl betaine or sulphobetaine and a soap in the ratio of 2:1:1, respectively.

3,755,560

NONGREASY COSMETIC LOTIONS

Yancy J. Dickert, Bruce P. Thill, and Alfred F. Steinhauer, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 873,081, Oct. 31, 1969. This application June 30, 1971, Ser. No. 158,559

Int. Cl. A61k *7/00, 9/06;* A61l *23/00*

U.S. Cl. 424—78 9 Claims

Aqueous based cosmetic lotions for skin care and skin protection may be formulated to contain high levels of an oily effect agent, such as an emollient, without imparting a greasy or oily feel to the touch after applying and drying same by the inclusion in the lotion of an emulsion (latex) of a water insoluble, organo soluble, film-forming vinyl polymer and a cosmetically suitable emulsifying agent. The effect agent must be a non-solvent and a non-plasticizer for the vinyl polymer. Certain desirable ingredients such as humectants, thickeners, etc. may be optionally added to the lotion.

3,755,561

BACTERICIDAL CONTACT LENS SOLUTION

Billy F. Rankin, Rockville, Md., assignor to Burton, Parsons & Company, Inc., Washington, D.C.

No Drawing. Continuation-in-part of application Ser. No. 44,564, June 8, 1970. This application Mar. 22, 1971, Ser. No. 127,002

Int. Cl. A61k *17/00*

U.S. Cl. 424—78 6 Claims

A composition is provided for employment with gel-type contact lenses, which contains no component which will become entrained in the lattice of the gel, and yet provides a durable bactericidal action for the lens and is compatible with ocular tissues. The composition comprises an aqueous solution of polyvinyl pyrrolidone and a polyalkylene glycol plasticizing humectant and up to about 1 part in 50,000, preferably not more than about 1 part in 100,000 of thimerosal.

3,755,562

PARAFFINIC BASE OIL CARRIER COMPOSITIONS FOR PESTICIDES

Frederic C. McCoy, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed June 24, 1968, Ser. No. 739,181

The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed

Int. Cl. A01n *9/20, 13/00*

U.S. Cl. 424—78 15 Claims

A pesticidal dispersion comprising (1) a paraffinic hydrocarbon oil having an unsulfonatable content of at least about 90 wt. percent, (2) an oil soluble aluminum, iron, nickel, alkali metal, alkaline earth metal or alkylamine salt of a carboxylic or dihydrocarbyl orthophosphoric acid (3) an ashless dispersant for lubricating oils selected from (a) alkylene oxide derivative of an organic phosphorus acid, (b) alkyl methacrylate-vinyl pyrrolidinone copolymer, or (c) an alkoxylated piperazine derivative of alkenyl succinic anhydride and (4) a finely divided, oil insoluble pesticidal compound dispersed throughout, said composition optionally including a supplementary suspending agent.

3,755,563

METHOD AND COMPOSITION FOR ATTRACTING AND COMBATING INSECTS, IN PARTICULAR BARK BEETLES

Jean P. Vité, Beaumont, Tex., assignor to Boyce Thompson Institute for Plant Research, Inc.

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,491

Int. Cl. A01n *17/14, 9/28*

U.S. Cl. 424—84 10 Claims

A method is described for combating invertebrate animals such as bark bettles by regulating the aggregation of them. The method exploits chemical compositions having a content of attractants comprising the class of dioxabicyclo compounds exemplified by 1,5 - dimethyl-6,8 - dioxabicyclo[3.2.1]octane, used alone, or in combination with normal terpenoid compounds of tree resins or in combination with normal terpenoid compounds of tree resins and a compatible biocide.

3,755,564

SYNERGISTIC INSECTICIDAL COMPOSITION OF DIAZINON AND A CERTAIN CARBAMATE

Kurt Gubler, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

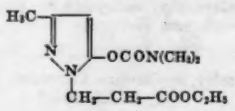
No Drawing. Continuation-in-part of application Ser. No. 803,090, Feb. 27, 1969. This application Nov. 15, 1971, Ser. No. 199,017

Claims priority, application Switzerland, Mar. 7, 1968, 3,410/68

Int. Cl. A01n *9/22, 9/36*

U.S. Cl. 424—200 4 Claims

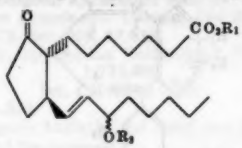
Insecticidal compositions which are synergistic insecticidal mixtures of O,O-diethyl-O-(2-isopropyl-6-methyl-pyrimidyl-(4))-thiophosphate, known under the trade name of Diazinon® with the carbamate of the formula



are described as well as methods for combatting insects using these compositions.

3,755,565
METHOD FOR INHIBITING BLOOD PLATELET AGGREGATION
Robert L. Spraggins, San Jose, Calif., assignor to Alza Corporation
No Drawing. Filed June 23, 1971, Ser. No. 156,074
Int. Cl. A61k *17/00*
U.S. Cl. 424—101 7 Claims

A method for inhibiting blood platelet aggregation by adding to platelets a prostaglandin of the general formula:



wherein R_1 is hydrogen or alkyl, R_2 is hydrogen or acyl, its diastereomers and non-toxic salts.

3,755,566
9α-FLUORO - 16-FLUOROMETHYLENEPREDNISOLONE-21-ENANTHATE AND PROCESS FOR THE PREPARATION THEREOF
Klaus Irmscher, Gerhard Cimbollek, Hans-Gunther Kraft, and Jurgen Harting, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
No Drawing. Original application Feb. 6, 1970, Ser. No. 9,408, now Patent No. 3,681,409, dated Aug. 1, 1972. Divided and this application Jan. 31, 1972, Ser. No. 222,297
Int. Cl. A61k *17/00*
U.S. Cl. 424—243 5 Claims

9α-fluoro - 16-fluoromethyleneprednisolone - 21-enanthate has high anti-proliferative activity with relatively little glyconeogenetic and adrenal atrophy side effects when administered to mammals having a skin disease such as psoriasis.

3,755,567
METHOD FOR TREATING ALCOHOLISM
Hamao Umezawa, Tokyo, and Motoi Ogata, Ebetsu, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
No Drawing. Filed Apr. 2, 1971, Ser. No. 130,786
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 1 Claim

Therapeutic compositions having antialcoholism action, in which the active agent is a compound selected from the group consisting of calcium 5-butylpicolinate and calcium 5-pentylpicolinate, said agent being present in the amount of about 50 to 200 mg. per unit dose of the composition.

3,755,568
PROCESSES FOR MAKING COMPETITIVE INHIBITION AGENTS AND PRODUCTS THEREOF
Sol Roy Rosenthal, Box F, Rancho Sante Fe, Calif. 92067
Continuation-in-part of application Ser. No. 720,751, Apr. 10, 1968, which is a continuation-in-part of application Ser. No. 587,669, Oct. 19, 1960. This application Nov. 5, 1970, Ser. No. 87,252
Int. Cl. A61k *27/00*
U.S. Cl. 424—177 5 Claims

There is disclosed a process for providing in vitro a competitive inhibition agent or competitin for inhibiting the action in vivo of a material such as tissue injury toxins, the process comprising first subjecting the material to freezing and thawing and heating and thereafter subjecting the material to sonication or high pressure or enzymatic action, thus to produce a competitive inhibition agent that competes in vivo with the material for the receptor sites on target cells.

3,755,569
ACYL-SUBSTITUTED INSULINS
Richard L. Fenichel, Wyncote, Norman H. Grant, Wynnewood, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 86,377, Nov. 2, 1970, which is a division of application Ser. No. 732,812, May 29, 1968. This application July 25, 1972, Ser. No. 274,925
Int. Cl. A61k *17/02*
U.S. Cl. 424—178 3 Claims

Acyl-substituted-insulins, particularly phenyl- and substituted-phenylglycyl-insulins, especially N-phenylglycyl-insulin, N-p-methylphenylglycyl-insulin and N-p-chlorophenylglycyl-insulin (I), are prepared by treating insulin with an acylating agent, especially the corresponding N-chloroformyl-N-phenyl or substituted-phenylglycin (II). The new compounds (I) have hypoglycemic activity and are useful to treat diabetes, especially in subjects who are insulin fast.

3,755,570
CONTROL OF PESTS WITH S-2-HYDROCARBYLTHIOALKYL ESTERS OF THIOPHOSPHORUS ACIDS
Wolfgang H. Mueller, Elizabeth, Warren A. Thaler, Matawan, and Alexis A. Oswald, Mountainside, N.J., assignors to Esso Research and Engineering Company
No Drawing. Original application Mar. 4, 1969, Ser. No. 805,115, now Patent No. 3,660,542. Divided and this application Feb. 10, 1972, Ser. No. 225,359
Int. Cl. A01n *9/36*
U.S. Cl. 424—216 13 Claims

Neutral S-2-hydrocarbylthioalkyl esters of thiophosphorus acids possess particularly good pesticidal activity against insects, mites and nematodes.

3,755,571
USE OF SUBSTITUTED 1,2,4-THIADIAZOLES FOR KILLING INSECTS
Edmund J. Gaughan, Kensington, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Original application Jan. 2, 1970, Ser. No. 431, now Patent No. 3,632,597. Divided and this application Apr. 23, 1971, Ser. No. 137,038
Int. Cl. A01n *9/36*
U.S. Cl. 424—200 10 Claims

Insecticidal compositions, and methods of killing insects employing such compositions are disclosed. The active ingredients of the compositions are substituted 5-phosphorylacetamido- and substituted 5-phosphonyl acetamido-3-alkylthio- or alkoxy-1,2,4-thiadiazoles.

3,755,572
COMBATING ACARIDS AND INSECTS WITH AMIDO-THIONO-PHOSPHORIC ACID PHENYL ESTERS
Gerhard Schrader, Wuppertal-Cronenberg, Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal-Vohwinkel, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Original application Nov. 13, 1968, Ser. No. 775,540, now Patent No. 3,621,082. Divided and this application Apr. 15, 1971, Ser. No. 134,436
Claims priority, application Germany, Nov. 30, 1967, P 16 68 047.0
Int. Cl. A01n *9/36*
U.S. Cl. 424—212 14 Claims

(N-unsubstituted and N-mono- and N,N-di- -alkyl-substituted amido)-O-alkyl-O-[(2-carboalkoxy and 2-carbocycloalkyloxy, i.e. 2-alkoxy carbonyl and 2-cycloalkyloxy carbonyl)phenyl]-thiono-phosphoric acid esters which possess arthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding thionophosphoric acid diester monohalide with ammonia or a primary or a secondary amine.

3,755,573

FERTILITY CONTROL EMPLOYING QUINESTROL AND QUINGESTANOL ACETATE

Edel Berman, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 869,934, Oct. 27, 1969, which is a continuation-in-part of application Ser. No. 596,081, Nov. 22, 1966. This application July 10, 1970, Ser. No. 54,026

Int. Cl. A61k *23/00*

U.S. Cl. 424—238 1 Claim

Method for fertility control by the administration of a single dose of quinestrol, orally or by injection, at weekly or monthly intervals or at greater intervals.

3,755,574

ESTROGENIC COMPOSITIONS COMPRISING 11β-ALKOXY-GONA-1,3,5(10)-TRIENES

Daniel Bertin and Andre Pierdet, Noisy-le-Sec, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Application Aug. 25, 1969, Ser. No. 852,905, which is a continuation-in-part of abandoned application Ser. No. 643,062, June 2, 1967. Divided and this application Jan. 21, 1971, Ser. No. 108,568

Int. Cl. A61k *17/00*

U.S. Cl. 424—238 10 Claims

Novel 11β-lower alkoxy-$\Delta^{1,3,5(10)}$-gonatrienes substituted in the 3-position by a member selected from the group consisting of hydroxy, alkoxy of 1 to 4 carbon atoms, cycloalkoxy of 5 to 6 carbon atoms, and acyloxy, wherein the acyl is derived from an organic carboxylic acid having 1 to 10 carbon atoms, in the 13-position by a lower alkyl radical, and in the 17-position by the grouping

wherein X is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, and Y is selected from the group consisting of a hydrocarbon radical and a substituted hydrocarbon radical. These compounds possess estrogenic activity.

3,755,575

PHARMACEUTICAL COMPOSITIONS

Leonard J. Lerner, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 222,946, Sept. 11, 1962. This application Jan. 26, 1965, Ser. No. 428,189

Int. Cl. A61o *27/00*

U.S. Cl. 424—240 2 Claims

A combination of a steroidal progestational agent and a steroidal estrogenic agent for parenteral administration to prevent conception.

3,755,576

ANTI-INFLAMMATORY COMPOSITIONS CONTAINING DIOXYPYRAZOLIDINE DERIVATIVES AND METHODS OF USE

Antonio Esteve, Barcelona, Spain, assignor to Laboratorios Del Dr. Esteve S.A.

No Drawing. Continuation-in-part of abandoned application Ser. No. 777,203, Nov. 19, 1968. This application Mar. 17, 1971, Ser. No. 125,324

Claims priority, application Spain, Nov. 23, 1967, 347,942

Int. Cl. A61k *17/16, 27/00*

U.S. Cl. 424—240 14 Claims

Novel para-halogeno benzoates, in particular the para-chlorobenzoate of 1,2-diphenyl-4-n-butyl-4-hydroxymethyl-3,5-dioxopyrazolidine have been prepared. These have therapeutic properties which make them suitable for the treatment of disorders which are accompanied by inflammation, such as acute, subacute and chronic rheumatismal disorders.

3,755,577

ANIMAL FEED AND PROCESS

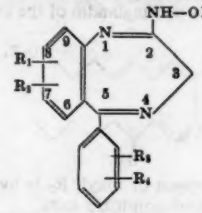
Robert J. Collins, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,324

Int. Cl. A61k *27/00*

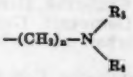
U.S. Cl. 424—244 12 Claims

An animal feed comprising a compound of the group consisting of a 3H-1,4-benzodiazepine of the formula:



Formula 1

wherein R is selected from the group consisting of hydrogen, lower-alkyl of 1 to 4 carbon atoms, inclusive, lower-alkenyl of 3 or 4 carbon atoms, benzyl, $—H_2CCOOH$ and $—(CH_2)_2COOH$ and the esters thereof derived from an alkanol of 1 to 3 carbon atoms, inclusive, and



in which n is 3 or 4 and R_5 and R_6 are lower-alkyl of 1 to 4 carbon atoms, inclusive, or R_5 and R_6 together are alkylene of 4 or 5 carbon atoms, and wherein R_1, R_2, R_3, and R_4 are selected from the group consisting of hydrogen, lower alkoxy of 1 to 3 carbon atoms, inclusive, alkyl defined as above, alkylthio in which the alkyl group is defined as above, halogen, nitro, cyano and $—CF_3$; and pharmacologically acceptable acid addition salts thereof in combination with the nutrient feed.

3,755,578

THIAZOLINE AND 5,6-DIHYDRO-4H-1,3-THIAZINE ANTI-PLANT-VIRAL AGENTS

James W. McFarland, Lyme, and Verne A. Ray, Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application June 6, 1969, Ser. No. 831,245, now Patent No. 3,629,247, dated Dec. 21, 1971. Divided and this application Jan. 6, 1971, Ser. No. 104,478

Int. Cl. A01n *9/00*

U.S. Cl. 424—246 6 Claims

Aryl vinyl derivatives of thiazoline and 5,6-dihydro-4H-1,3-thiazine which exhibit antiviral activity particularly in the combating of plant viral diseases.

3,755,579

2,3-DIHYDRO-1H-PYRIDO[2,3-b][1,4]THIAZIN-2-ONE AS AN ANTI-SECRETORY AGENT

Claude Gaston Biava, Deerfield, and Kao Hwang, Highland Park, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,232

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 1 Claim

A method of treating peptic ulcers by reducing the rate of gastric secretions using 2,3-dihydro-1H-pyrido[2,3-b][1,4]thiazin-2-one as the anti-secretory agent.

3,755,580

INSECTICIDAL TRIAZINE DERIVATIVES

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 19, 1970, Ser. No. 47,877

Int. Cl. A01n *9/22*

U.S. Cl. 424—249 12 Claims

Insecticidal compositions and methods utilizing triacyloxy hexahydrotriazines in which the acyl group can

have an alkyl, haloalkyl, phenylalkyl, phenylalkenyl, furan or substituted phenyl substituent.

3,755,581

COMBATTING PHYTOPATHOGENIC BACTERIA AND FUNGI WITH N-PHENYLQUINAZOLONES

Stefan Janiak, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

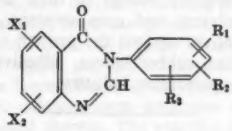
No Drawing. Original application Feb. 24, 1969, Ser. No. 801,830, now abandoned. Divided and this application Nov. 12, 1970, Ser. No. 89,018

Claims priority, application Switzerland, Feb. 27, 1968, 2,779/68

Int. Cl. A01n *9/00*

U.S. Cl. 424—251 9 Claims

Phytopathogenic bacteria and fungi are controlled with quinazolones of the formula



in which each of X_1 and X_2 is hydrogen, halogen, lower alkyl, lower alkoxy or lower alkylthio; and each of R_1, R_2 and R_3 is hydrogen, halogen, CF_3, CN, NO_2, lower alkyl, lower alkoxy, carboxy lower alkyl, lower acylamino, phenoxy or halogenated phenoxy.

3,755,582

QUINAZOLINONE FUNGICIDES

Greg Alan Bullock, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,143

Int. Cl. A01n *9/12, 9/22*

U.S. Cl. 424—251 6 Claims

A group of substituted 4(3H)-quinazolinone compounds are useful as fungicides. An exemplary compound of the group is 3 - allyl - 6-chloro-2-methylthio-4(3H)-quinazolinone.

3,755,583

BENZOTHIENO[3,2-d]- AND BENZOFURO[3,2-d] PYRIMIDINES INHIBITORS OF PLATELET AGGREGATION

Gerald George De Angelis, North Stonington, and Hans-Jurgen Ernst Hess, Old Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application June 5, 1970, Ser. No. 43,974, now Patent No. 3,706,747. Divided and this application Nov. 24, 1971, Ser. No. 202,029

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 8 Claims

4-aminobenzothieno[3,2-d]- and 4 - aminobenzofuro-[3,2-d]pyrimidines and salts thereof, novel classes of heterocyclic compounds useful as inhibitors of platelet aggregation.

3,755,584

TRANQUILIZERS

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,770

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 4 Claims

γ-Carbolines carrying fluorine in the 6- or 8-position and a specific p-substituted phenylalkyl moiety at the 2-position were found to be major tranquilizers at low doses in warm-blooded animals.

3,755,585

METHOD OF TREATING INFLAMMATION

Henricus J. C. Tendeloo, Valkenburchtlaan 35, Oosterbeek, Frederik W. Broekman, Geertjesweg 98, Wageningen, Wouter F. H. Stroer, Graaf Willemlaan 68, Amstelveen, and Johannes J. Siemelink, Emmalaan 1, Utrecht, all of Netherlands

No Drawing. Filed Aug. 3, 1971, Ser. No. 168,765

Claims priority, application Netherlands, Aug. 7, 1970, 7011749

Int. Cl. A61k *27/00*

U.S. Cl. 424—266 7 Claims

Pharmaceutical compositions comprising 4-hydroxynicotinic acid or a pharmaceutically acceptable salt thereof, useful as analgesics and antiphlogistics.

3,755,586

ANTI-TUSSIVE COMPOSITIONS CONTAINING PIPERIDINE DERIVATIVES

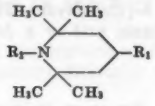
Neil P. Sanzari, Parsippany, and Jane F. Emele, Morris Plains, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 816,069, Apr. 14, 1969. This application Mar. 25, 1971, Ser. No. 128,118

Int. Cl. A61k *27/00*

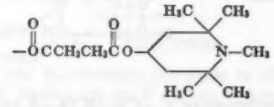
U.S. Cl. 424—267 8 Claims

An anti-tussive composition containing per dosage unit from about 0.5 to 30 mg. of a piperidine derivative of the formula:

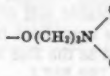


(I)

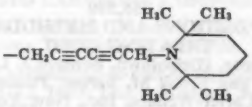
wherein R_1 is amino or



or



R_2 is methyl or



and the corresponding pharmaceutically acceptable acid addition salts or quaternary ammonium salts thereof. The composition is administered, preferably orally, at about 0.05 to about 2.5 mg./kg. of body weight.

3,755,587

COMPOSITIONS AND METHODS FOR LOWERING BLOOD SUGAR USING ARYL-SULPHONYL-SEMICARBAZIDES CONTAINING HETEROCYCLIC ACYLAMINO GROUPS

Hans Plumpe and Walter Puls, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 12, 1968, Ser. No. 775,138, now Patent No. 3,668,215, dated June 6, 1972. Divided and this application Apr. 23, 1971, Ser. No. 137,077

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 13 Claims

Oral antidiabetic compositions are provided which utilize aryl-sulphonyl-semicarbazides having heterocyclic

acylamino groups. Typical embodiments are represented by the compounds 4-{{4-{β-[-methyl-isoxazolyl-(5)-carbonamido] - ethyl} - benzene - sulphonyl}} - 1,1 - hexamethylene-semicarbazide, 4 - [4 - {β-[4,5-tetramethylene-isoxazolyl - (3) - carboxamido] - ethyl}-benzene-sulphonyl] - 1,1 - hexamethylene-semicarbazide and 4 - [3-{β - [5 - methylisoxazolyl - (3) - carboxamido]-ethyl}-benzene-sulphonyl] - 1,1 - hexamethylene-semicarbazide which are administered in dosages of 1–10 mg./kg. to a diabetic host formulated with excipients and tableted or filled into gelatin capsules.

It is known that arylsulphonyl-urea derivatives have a blood sugar-depressing effect. In particular, N-(4-methyl-benzene-sulphonyl) - N' - butyl - urea (tolbutamide) has achieved great importance as a therapeutic agent because of its blood sugar-depressing effect in conjunction with its good compatibility.

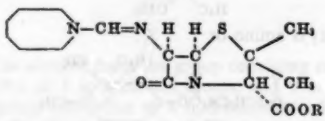
3,755,588

PENICILLANIC ACID IN DOSAGE-UNIT FORM

Frantz Johannes Lund, Lyngby, Denmark, assignor to Lovenskemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,977
Int. Cl. A61k *21/00*
U.S. Cl. 424—271 **3 Claims**

The invention relates to a pharmaceutical composition in dosage-unit form for use in the treatment of infectious diseases and comprising, as an active ingredient, the hitherto unknown 6-[(hexahydro-1H-azepin-1-yl)-methyleneamino]-penicillanic acid or a derivative thereof of the formula:



wherein R is hydrogen or a —CH_2OCO—A group, wherein A is aliphatic group of from 1 to 6 carbon atoms, or a pharmaceutically acceptable salt of such acid or ester, the quantity of the active ingredient in a dose being from 25 to 1000 mg. calculated as the free acid.

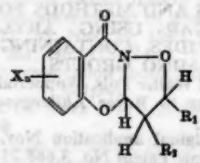
3,755,589

COMPOSITIONS AND METHODS FOR TREATING GOUT

David B. Reisner, Hightstown, Bernard J. Ludwig, North Brunswick, and Frank M. Berger, Princeton, N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 826,738, Mar. 24, 1969, now abandoned, and Ser. No. 4,745, Jan. 21, 1970, now Patent No. 3,598,814. This application Aug. 5, 1971, Ser. No. 169,556
Int. Cl. A61k *27/00*
U.S. Cl. 424—272 **4 Claims**

Chemical compounds of the formula:



wherein *n* is 1 or 2 and wherein each X is hydrogen, hydroxy, halogen, lower alkyl, lower alkoxy, nitro, amino, acetamido, sulfonamido or trifluoromethyl and each R is selected from the group consisting of hydrogen and lower alkyl. Said compounds have demonstrated hypouricemic activity in humans as well as valuable anti-inflammatory, antipyretic and diuretic activities in standard laboratory animals.

3,755,590

CERTAIN TRIAZINES USED TO CONTROL BACTERIA AND FUNGI

Lester A. Brooks, East Norwalk, and Allan M. Harvey, Wilton, Conn., assignors to R. T. Vanderbilt Co., Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 591,116, Nov. 1, 1966, which is a continuation-in-part of Ser. No. 439,432, Mar. 12, 1965, both abandoned. This application Nov. 19, 1970, Ser. No. 91,217
Int. Cl. A01n *9/22*
U.S. Cl. 424—249 **3 Claims**

This invention relates to the use of certain hexahydro-1,3,5-trialkyl-s-triazines as bacteriostats and fungicides, and more particularly relates to their use in sanitizing dry cleaning solvents and mop saturants, as fungicides, and as preservatives against the growth of micro-organisms in cosmetics, rubber latices, adhesives, and drilling mud used in the petroleum industry.

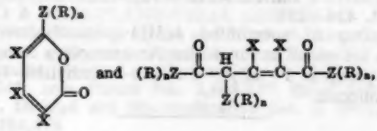
3,755,591

BIOCIDAL METHODS EMPLOYING PERHALO-COUMALIN DERIVATIVES

Victor Mark, Ransomville, and Leon Zengierski, North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Oct. 12, 1966, Ser. No. 586,056, now Patent No. 3,528,995, dated Sept. 15, 1970. Divided and this application Nov. 24, 1969, Ser. No. 877,596
Int. Cl. A01k *27/00*; A61k *27/00*
U.S. Cl. 424—279 **16 Claims**

A compound selected from the group consisting of compounds of the formulae



wherein X is a halogen chosen from the group consisting of fluorine, chlorine, bromine, and iodine, and mixtures thereof. $(R)_nZ$ is a substituents in which the following relationship exists:

If *n* is—	Z may be—
0	Bromine, iodine, fluorine.
1	Oxygen, sulfur, selenium.
2	Nitrogen, arsenic.
3	Carbon.

and wherein R is selected from the group consisting of hydrogen; alkyl groups of 1 to 18 carbon atoms in any of their isomeric forms, provided that when Z is oxygen the alkyl groups from which R may be selected contain from 6 to 18 carbon atoms; substituted alkyl groups of 1 to 18 carbon atoms wherein the substituents are selected from the group consisting of fluorine, chlorine, bromine, iodine, sulfur, oxygen, phosphorus, nitrogen, and silicon; alicyclic groups containing from 5 to 18 carbon atoms; heterocyclic groups containing from 5 to 18 carbon atoms wherein the hetero atom(s) is selected from the group consisting of oxygen, sulfur, nitrogen, phosphorus, and silicon; and aromatic and aralkyl groups containing from 6 to 18 carbon atoms.

The compounds are useful as pesticides, bactericides, fungicides, nematocides, insecticides and miticides.

3,755,592

METHOD OF PREPARING HIGH CONCENTRATION CALCIUM ASCORBATE REACTION PRODUCTS AND PRODUCTS PRODUCED BY SAME

Gerhard W. Ahrens, 1781 E. 15th St., Brooklyn, N.Y. 11229

No Drawing. Continuation-in-part of abandoned application Ser. No. 805,029, Mar. 6, 1969. This application Mar. 23, 1971, Ser. No. 127,391

Int. Cl. A61k *15/12*

U.S. Cl. 424—280 4 Claims

Novel high concentration calcium ascorbate preparations are formed which essentially consist of a series of from liquid to solid reaction products resulting from the reaction of up to 82 parts by weight percent, on the total weight of the reaction product, of nonhygroscopic calcium ascorbate dihydrate with not less than 18 parts by weight, on the total weight of the reaction product, of an anhydrous hydroxypropane derivative having from 2 to 3 hydroxy groups selected from the group including 1,2-dihydroxypropane and trihydroxypropane. The resulting of reaction products supply per gram reaction product up to 672 mgs. active L-ascorbic acid or vitamin C and up to 78 mgs. of ionic calcium upon ionization of the calcium ascorbate contained therein. The reaction products result from the application of heat to admixed calcium ascorbate dihydrate and anhydrous hydroxypropane derivatives at a reaction temperature which is limited to temperature exexposure levels at which the calcium ascorbate dihydrate will not lose more than one molecule of its water of hydration. The resulting products are extremely stable and useful in medical, pharmaceutical and dermatological preparations, as such or when added to suitable carriers having constituents compatible with the anhydrous hydroxypropane derivatives.

3,755,593

TREATMENT OF PEPTIC ULCERATION WITH XANTHENE DERIVATIVES

Stewart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Continuation-in-part of application Ser. No. 858,183, Sept. 15, 1969, now Patent No. 3,686,218, which is a continuation-in-part of application Ser. No. 662,987, Aug. 23, 1967, now Patent No. 3,644,420. This application July 31, 1972, Ser. No. 276,670

Claims priority, application Great Britain, Sept. 2, 1966, 39,384/66; Apr. 5, 1967, 15,692/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 11 Claims

Xanthene derivatives having utility in the treatment of peptic ulceration.

3,755,594

ANTI-SECRETORY COMPOSITION CONTAINING XANTHENE DERIVATIVES AND USES THEREFOR

Stewart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Application Sept. 15, 1969, Ser. No. 858,183, now Patent No. 3,686,218, which is a continuation-in-part of application Ser. No. 662,987, Aug. 23, 1967, now Patent No. 3,644,420. Divided and this application Aug. 2, 1972, Ser. No. 277,333

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 11 Claims

4-(9-xanthenyl)semicarbazide and thiosemicarbazide, 4-(9 - thiaxanthenyl)semicarbazide and thiosemicarbazide and derivatives of these compounds, useful as antisecretory agents.

3,755,595

FUNGICIDAL METHODS AND COMPOSITIONS CONTAINING A TRICYCLOHEXYLTIN COMPOUND AND AN ALIPHATIC AMINE

Cleve A. I. Goring, Walnut Creek, and Ronald J. Sbragia, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,372

Int. Cl. A01n *9/00*

U.S. Cl. 424—288 8 Claims

Fungicidal methods and compositions containing a tricyclohexyltin compound together with an aliphatic amine such as butylamine, ethylenediamine, diethylenetriamine or N-ethylethylenediamine. The addition of the amine provides methods and compositions having increased microbiocidal activity as well as reduced levels of phytotoxicity when applied to plant foliage.

3,755,596

STABILIZED INSECTECIDAL COMPOSITION EMPLOYING CERTAIN ACID STABILIZERS

Toshiaki Osugi, Takatsuki, Japan, assignor to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

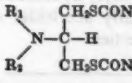
No Drawing. Filed Mar. 6, 1970, Ser. No. 17,306

Claims priority, application Japan, Mar. 8, 1969, 44/17,662

Int. Cl. A01n *9/12*

U.S. Cl. 424—300 11 Claims

Stable insecticidal preparations contain at least (1) an acid salt of a carbamoyl derivative represented by the general formula:



wherein R_1 and R_2 represent the same or different lower alkyl radical having up to 6 carbon atoms, or wherein R_1 and R_2 together with the nitrogen atom form a heterocyclic ring, (2) an organic acid compound and (3) a comminuted mineral carrier.

3,755,597

MOSQUITO LARVICIDE COMPOSITIONS

Walter William Abramitis, Downers Grove, Ill., assignor to Akzona, Incorporated, Asheville, N.C.

No Drawing. Continuation-in-part of application Ser. No. 610,748, Jan. 23, 1967. This application Nov. 24, 1969, Ser. No. 879,582

Int. Cl. A01n *9/20*

U.S. Cl. 424—304 4 Claims

Compositions for killing the larvae of insects comprising an inert organic or aqueous carrier and an amine compound selected from the group consisting of N-(2-cyanoethyl)dodecylamine and long chain aliphatic hydrocarbon diamines, especially N-tallow 1,3-trimethylene diamine.

3,755,598

MOSQUITO CONTROL AGENTS

Robert K. Howe, Bridgeton, and Walter A. Darlington, Brentwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,771

Int. Cl. A01n *9/06, 9/20*

U.S. Cl. 424—304 3 Claims

N - (3,5 - di(trifluoromethyl)phenyl)azomalononitriles for use in combating mosquitoes.

3,755,599

METHODS FOR RELIEVING BRONCHOSPASM WITH PROSTAGLANDIN-A COMPOUNDS

Marvin E. Rosenthale, Havertown, and Donald P. Strike, Rosemont, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,209
Int. Cl. A61k *27/00*
U.S. Cl. 424—305 4 Claims

Members of the prostaglandin-A series, 19-hydroxylated derivatives thereof, their esters, alkali metal salts, and amine salts are employed in compositions and methods for relieving bronchial spasm and facilitating breathing in warm blooded animals. Administration by the oral inhalation route is particularly effective.

3,755,600

N - ACYL-DICYANOCARBONYL-PHENYL-HYDRAZONES AS ARTHROPODICIDES AND FUNGICIDES

Karl Heinz Buchel, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, Gunter Unterstenhofer, Opladen, and Ferdinand Grewe, Burscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Dec. 9, 1969, Ser. No. 883,631, now Patent No 3,660,462. Divided and this application Jan. 27, 1972, Ser. No. 221,385
Int. Cl. A01n *9/20*
U.S. Cl. 424—304 12 Claims

The use of 1 - (α - cyano-α-cyano)-carbonyl-2-(alkyl, chloroalkyl, alkenyl, alkoxy, cycloalkyloxy, alkenyloxy, phenyl, phenoxy and dialkylamino)-carbonyl and thiocarbonyl-2-[(mono, and same and mixed di and tri, -chloro, -fluoro, -trifluoromethyl, -alkyl, -alkoxy, -nitro and -acetylamino)-phenyl]-hydrazones, which possess arthropodicidal, especially acaricidal and insecticidal, as well as fungicidal properties.

3,755,601

METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING POLYHALOALDEHYDE CONDENSING PRODUCTS

Roger C. Parish, King of Prussia, and John E. Trel, West Chester, assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 881,868, Dec. 3, 1969. This application May 31, 1972, Ser. No. 258,253
Int. Cl. A61k *27/00;* A61n *9/24*
U.S. Cl. 424—313 5 Claims

Certain condensation reaction products of polyhaloaldehydes with active hydrogen containing chemicals when ingested admixed in the feed of ruminants in doses which have no therapeutic or toxic properties and which do not inhibit overall fermentation of the rumen, improve the feed efficiency of the ruminant significantly. The chemical compounds are added to the feed as a uniform additive, used as a premix combined with an edible carrier or dispersed in salt blocks for pasture feeding. Preferred and exemplary compounds to be used as active ingredients are 5,5,5-trichloro-4-hydroxy-2-pentanone and the condensation products of chloral with ethyl or methyl malonate.

3,755,602

PHARMACEUTICAL COMPOSITIONS CONTAINING LITHIUM RHEINANTHRONE AND LITHIUM RHEINANTHRONE COMPLEX SALT

Herbert Alan Ryan and Charles Aubrey Friedmann, London, England, assignors to Westminister Laboratories, Limited, London, England

No Drawing. Original application May 24, 1963, Ser. No. 282,963, now Patent No. 3,519,655, dated July 7, 1970. Divided and this application Jan. 9, 1970, Ser. No. 31,466
Int. Cl. A61k *27/00*
U.S. Cl. 424—317 9 Claims

Pharmaceutical compositions comprising lithium rheinanthrone and lithium rheinanthrone complex salt that are suitable for administration to humans and animals for the purpose of inducing a peristaltic response and for the correction of constipation.

3,755,603

BIPHENYLYLOXYACETIC ACIDS IN PHARMACEUTICAL COMPOSITIONS

Ian T. Harrison and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No. 608,956, Jan. 13, 1967. This application July 1, 1970, Ser. No. 51,737
Int. Cl. A61u *27/00*
U.S. Cl. 424—317 2 Claims

Biphenylyloxyacetic acids having optional substitution in the ring carbons and the α-carbon of the acetic acid moiety and the corresponding amide, ester, and addition salts thereof which compounds are useful as anti-inflammatory, analgesic, anti-pyretic and antipruritic agents as well as fibrinolytic and hypocholesterolemic agents. The compounds per se and pharmaceutical compositions incorporating, and pharmaceutical methods employing these compounds are disclosed.

3,755,604

SEBUM INHIBITORS

Duane Gordon Gallo, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,192
Int. Cl. A61k *27/00*
U.S. Cl. 424—317 5 Claims

A process is disclosed for inhibition of sebum production by sebaceous cells. This process is carried out by contacting the sebaceous cell with a pentadienoic acid such as 3-methyl-5-phenyl-2-trans-4-trans - pentadienoic acid or 2 - alkyl-3-methyl-5-phenyl-2-trans-4-trans-pentadienoic acids.

3,755,605

DIPHENYLAMINE DERIVATIVES

George G. I. Moore, Birchwood, and Joseph Kenneth Harrington, Edina, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 28,082, Apr. 13, 1970. This application June 13, 1972, Ser. No. 262,302
Int. Cl. A61k *27/00*
U.S. Cl. 424—321 10 Claims

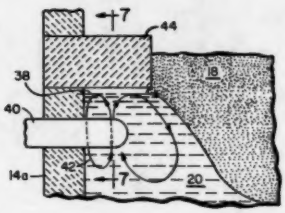
Diphenylamines substituted by haloalkylsulfonamido groups and optionally substituted by other groups on the phenyl rings. These compounds and their salts are active anti-microbial agents and some are useful as anti-inflammatory agents, analgesics and herbicides.

ELECTRICAL

3,755,606
APPARATUS FOR MELTING THERMOPLASTIC MATERIAL

George B. Boettner, and Paul F. Spremulli, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,841
Int. Cl. C03b 5/02
U.S. Cl. 13—6 8 Claims

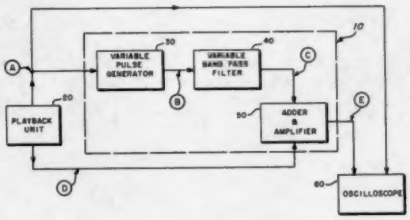


An improvement in the melting zone of a furnace, having a plurality of spaced and immersed electrodes for melting and refining thermoplastic material, wherein there is incorporated, above the electrodes and not in contact with the molten material, means for deflecting raw batch away from the vicinity of the electrodes and for substantially preventing incompletely-melted batch from being convected toward the vertical furnace wall area closest to the ends of the electrodes, thereby minimizing the downward convection of the raw or partially-melted batch in the vicinity of this furnace wall area. If desired, the deflector means can also have incorporated therein radiant heating means for maintaining a small pool of molten material directly above the electrodes.

3,755,607
WAKE SIMULATOR

Paul Terpeluk, Horsham, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 30, 1965, Ser. No. 476,787
Int. Cl. G09b 9/00
U.S. Cl. 35—10.4 10 Claims



1. An electronic device for simulating wakes of submarines or other underwater targets comprising:

first circuit means for providing a series of output signals representative of sea background and a triggering pulse prior to each of said signals;

second circuit means receiving said triggering pulses from said first circuit for generating in response thereto rectangular pulses having the trailing edges thereof occurring coincident in time with corresponding ones of said sea background signals;

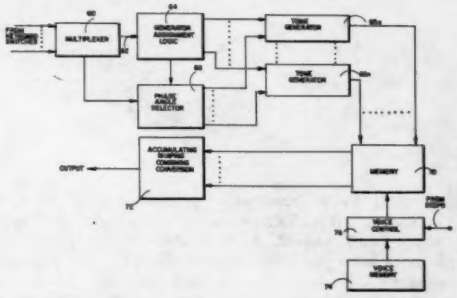
third circuit means receiving the output of said second circuit means for filtering the same and providing output signals indicative of the wake of the target, said wake signals having coincidence in time with corresponding ones of said sea background signals; and

fourth circuit means receiving said series of sea background signals and said wake signal for adding the same and for providing a composite signal representative of a target wake superimposed on the sea background.

3,755,608
APPARATUS AND METHOD FOR SELECTIVELY ALTERABLE VOICING IN AN ELECTRICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 6, 1971, Ser. No. 204,839
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 24 Claims



A number of different voices of an electrical organ are stored in specification memories as groups of amplitude samples of respective voices of the instrument. Under control of selectively actuated stops, groups of amplitude samples of chosen voices are extracted from the specification memories, combined, and stored in an alterable or registration memory. The latter is addressed for read out at a rate selected according to the frequency of the note to be generated. The various voices are combinable in different groups and chosen combinations are selectively stored in any one of several registration memories of which there may be one for each division of an organ and which may feed two or more separate audio channels. Selective scaling of one or more of the voices read from the specification memories will increase the number of voice combinations available. Loading of a newly selected voice combination into the registration memory may occur continuously during read out of the registration memory, or only upon actuation of a stop. Although loading of a new voice combination into the registration memory in one embodiment takes place during the read out of the registration memory, the loading may take place at less than musical frequency and at rates slower than registration memory read out rates.

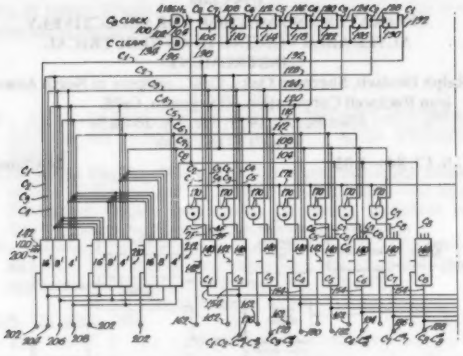
3,755,609
INTEGRATED CIRCUIT ALL-HARMONIC WAVE ORGAN SYSTEM INCLUDING PROVISION FOR FLUTE TONES AND PEDAL NOTES

David Millet, Cambridge, Mass., and Ray B. Schrecongost, Park Ridge, Ill., assignors to Hammond Corporation, Deerfield, Ill.

Filed Apr. 28, 1972, Ser. No. 248,677
Int. Cl. G10h 1/06; H03k 4/02
U.S. Cl. 84—1.23 14 Claims

A bright wave (all harmonic wave) organ system which has direct current (D.C.) keying for all notes, both manual and

pedal, and also provides sine wave (flute) notes by filtration. All-harmonic waves are provided by stairstepping octavely related square waves and the flutes by filtration of the complex stairstepped wave minus the square wave component which has its fundamental at twice the frequency of the desired flute note to accommodate octave flute filtering. The present arrangement is such that one integrated circuit package provides for two octavely related groups of adjacent notes, all C's and all C # 's, for instance, for eight octaves of manual notes and three octaves of 16-, 8- and 4-foot pedal notes or the



equivalent. Each circuit package requires only one musical frequency input or clock for each of two adjacent note groups, one for C and one for C # for instance. The integrated circuit packages are large scale integrations (LSI) and include the frequency dividers, the arrangement for keying and stairstepping the square waves, for collecting and controlling the outputs for octave or half octave sine wave filtration and for formanting, and for providing three pedal outputs, one each for the 16-foot, 8-foot and 4-foot pedal notes or the equivalent for other use. Provision is made for phase synchronization of the frequency dividers.

3,755,610

ELECTRICALLY CONDUCTIVE CABLE

Frank H. McTigue, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 15, 1971, Ser. No. 180,842

Int. Cl. H02g *15/20;* **B44d** *1/42*

U.S. Cl. 174—23 C **4 Claims**

Improvements are taught in the preparation of olefin coated electrically conductive cables wherein the space between individual singles wires within the cable is filled with petroleum jelly. The improvement comprises stabilizing the polymer coating on the singles wires with a specified thiobisphenol phosphite which is particularly resistant to extraction by petroleum jelly.

3,755,611

DEVICE FOR PASSING A CONDUCTOR THROUGH THE COVER OF AN ELECTRICAL PRECIPITATION APPARATUS

Robert Queck, Hurth-Burbach, and Hugo Werner, Hurth-Hermulheim, Knapsack, Germany, assignors to Knapsack Aktienegesellschaft, Knapsack Cologne, Germany

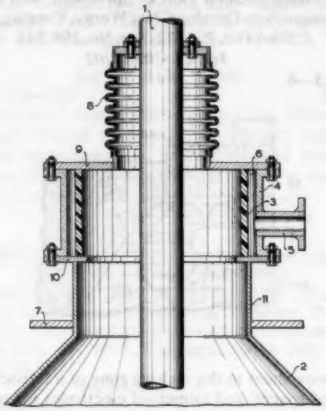
Filed Aug. 7, 1972, Ser. No. 278,569

Claims priority, application Germany, Aug. 9, 1971, P 21 39 824.3

Int. Cl. B03c *3/34;* **H01b** *17/26*

U.S. Cl. 174—31 R **4 Claims**

Improved lead-in device passing a conductor through the cover of an electrical precipitation apparatus down to its spray system. The improved device is characterized in that a porous insulator is used as the insulator and a gas-tight insulating cylinder concentrically surrounds the porous insulator. The device is further fitted with a tubular gas inlet opening into the porous insulating cylinder. The upper and lower ends of the



insulator and the insulating cylinder, respectively, are connected together by annular metal plates so as to form a space therebetween, and the space is occupied by a sealing gas maintained at a relatively higher pressure than that prevailing inside the electrical precipitation apparatus.

3,755,612

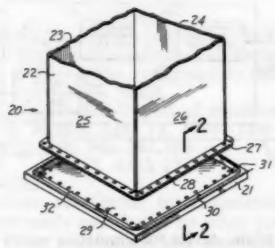
STRUCTURAL SUPPORTS PROVIDING SHIELDING AGAINST INTERFERENCE

Simon Yerkovich, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Mar. 6, 1972, Ser. No. 231,968

Int. Cl. H05k *9/00*

U.S. Cl. 174—35 MS **9 Claims**



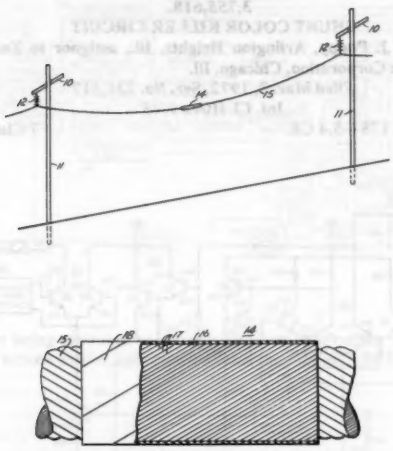
A structure is provided for supporting and shielding electrical apparatus. A metallic plate member is fastened to another metal member by suitable fasteners. The plate member is deformed in a region adjacent an edge portion thereof so that the edge portion grips the metal of the other member in interference relationship. The deformation of the region of the plate is to such degree that the elastic limit of the plate is not exceeded so that the plate continuously bears against such other member.

3,755,613

VIBRATION RESISTOR FOR OVERHEAD CONDUCTORS

Allan H. Kidder, P.O. Box 14, Lansdowne, Pa.

Filed May 10, 1972, Ser. No. 252,062
Int. Cl. H02g 7/14
U.S. Cl. 174—42 6 Claims



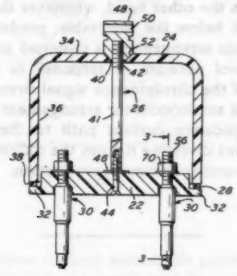
A vibration resistor is disclosed in which provision is made to retard vibration by mounting on the conductor an energy sink having a relatively short overlay of passive friction resistance imparting small strands mounted on the conductor with numerous contacts between the conductor and the small strands for wave energy absorption and disposal.

3,755,614

SEALED UNDERGROUND WIRING TEST STATION

Wallace B. Jakacki, Chalfont, Pa., assignor to Barlow Corp., Philadelphia, Pa.

Filed Jan. 21, 1972, Ser. No. 219,653
Int. Cl. H05k 5/06
U.S. Cl. 174—59 9 Claims



A test station is provided for underground wiring which comprises a housing having a planar circular base and a cap. The lateral surface of the base has an annular flange which extends around the base. An annular resilient gasket is disposed on the flange. The cap has an annular lip which is aligned with the flange. Means are provided for securing the cap to the base with the gasket being interposed between the lip and the flange and in communication with the interior of the housing to seal the housing. A pressure increase within the housing causes the gasket to be urged outwardly of the housing. When a pressure approximately twice that of atmospheric pressure is present in the housing, the gasket is completely removed from between the lip of the cap and the flange of the base to enable the escape of gas from the housing. After the pressure differential between the inside and outside of the housing has decreased, the resiliency of the gasket enables the gasket to close off the opening between the cap and the base to provide a fluid seal.

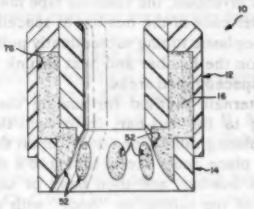
The station also includes a plurality of terminals disposed within respective flared openings in the base of the housing. Each terminal includes a threaded member soldered to an electrically conductive wire. A tapered collar is provided about the collar. Each terminal also includes a threaded nut which, when tightened on the threaded member, causes the sleeve to be compressed within the associated flared opening in the base of the housing to seal same.

3,755,615

ADAPTER ASSEMBLY FOR SEALING A CONNECTOR PART

Clarence Leonard Paullus, Lewisberry, and Larry Ronald Stauffer, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 29, 1972, Ser. No. 293,603
Int. Cl. H01r 13/52
U.S. Cl. 174—76 5 Claims



An adapter assembly is provided for sealing an end of an electrical connector part of the type having a body portion, a plurality of cavities extending through the body portion and opening at the end of the connector part, and a plurality of wires leading from the cavities outwardly from the end of the connector part. The adapter assembly includes a post member seatable upon the end of the connector part, a central passageway defined axially through the post member through which may pass the plurality of wires emanating from the connector part end, and a hollow cover member fitted about the post member in slideable engagement with opposing ends of the post member and moveable between initial and final positions relative to the post member along the longitudinal axis of the post member. An interior surface of the cover member disposed radially outwardly from an exterior surface of the post member forms a reservoir therebetween when the cover member is in its initial position. A predetermined quantity of impervious material capable of flowing under pressure and retainable in any shape as may be impressed on it is contained within the reservoir. A plurality of apertures defined in the post member and spaced from one another radially about the longitudinal axis of the post member communicate the exterior surface of the post member with the end of the connector part via the central passageway of the post member. When the post member is seated upon the end of the connector part and the cover member is forceably moved from its initial position to its final position at which a bottom portion of the cover member securedly engages the end of the connector part to fixedly secure the adapter assembly to the connector part, the impervious material is hydraulically forced to extrude through the plurality of apertures in the post member and fill the empty space about the plurality of wires in the end of the connector part and in the central passageway of the post member to thereby seal the end of the connector part.

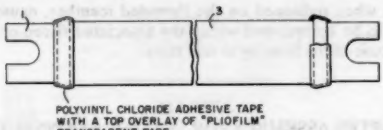
3,755,616
THERMOPLASTIC SEALED-SHEATH COVERING UPON ELECTRICAL BUS-BAR CONDUCTORS

Julius Toth, Beaver, and Edward M. Walker, Industry, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 888,296, Dec. 29, 1969, abandoned. This application Sept. 15, 1971, Ser. No. 180,872

Int. Cl. H01b 7/02

U.S. Cl. 174—120 SR **5 Claims**



An improved and relatively inexpensive electrical conductor, such as a bus-bar, or feeder conductor, of aluminum or copper, for example, is provided with a thermoplastic elongated tubular sheath, or sheath tubing, such as polyvinyl chloride heat-reactive tubing of resinous material, having the ends of the sheath, or tubing, sealed, in a water-tight fashion to the bus-bar by a thermoplastic resinous tape material. In one method of the invention, the resinous tape may be wound adjacent the outer ends of the bus-bar at spaced areas thereon, and the thermoplastic tubing subsequently pulled, as a second operation, upon the bus-bar and heat shrunk into place over the aforesaid spaced taped areas.

Another alternate method for sealing the thermoplastic sheath tubing to the bus-bar, is to heat-shrink the thermoplastic insulating tubing, or "boot" upon the bus-bar after pulling it into place, scalp excess tubing to a specified dimension upon the bus-bar, and then band or tape each of the scalped ends of the tubing, or "boot" with a suitable thermoplastic resinous tape material, such, for example, as polyvinyl chloride adhesive tape.

3,755,617
SUB-CARRIER SIGNAL GENERATING SYSTEM HAVING PHASE COMPENSATOR AND UTILIZING VIR SIGNALS

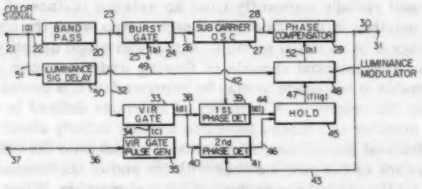
Takeshige Ichida, Kadoma City, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Osaka, Japan

Filed Dec. 14, 1971, Ser. No. 207,752

Claims priority, application Japan, Dec. 18, 1970, 45/114646; Dec. 25, 1970, 45/125577

Int. Cl. H04n 9/46

U.S. Cl. 178—5.4 HE **2 Claims**



A sub-carrier signal generator for use with a television receiver in the NTSC system for receiving a color signal including the vertical interval color reference (VIR) signal. The sub-carrier signal generator comprises means for generating a sub-carrier signal synchronized with the burst signal in the color signal, means for phase-detecting the VIR signal by using the burst signal to produce a compensation signal representing phase difference between the chrominance reference bar in the VIR signal and the burst signal, and means for compensating the phase of the sub-carrier signal by the compensation signal.

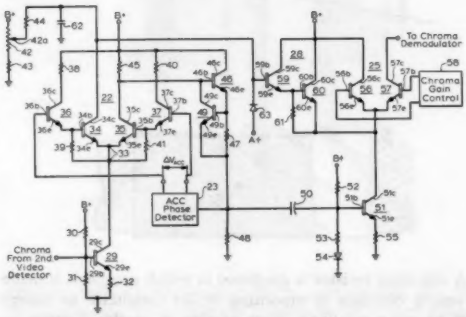
3,755,618
SHUNT COLOR KILLER CIRCUIT

Dwight J. Poppy, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 2, 1972, Ser. No. 231,317

Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 CK **7 Claims**



A color killer circuit is provided for disabling the chrominance processing channel when the signal strength of the received chrominance signals drops below a selectable, predetermined level. The circuitry, which is suitable for fabrication on a monolithic integrated circuit, includes a semiconductor arrangement coupled in shunt with a differential amplifier between a source of unidirectional potential (B+) and the output of a chroma driver amplifier. Whenever the chrominance signal strength is at or above the selectable, predetermined level indicative of normal color reception, the chroma driver, responsive to chrominance signals applied at its input, develops a chrominance-modulated current which is conducted through the differential amplifier to the chroma demodulator. On the other hand, whenever the chrominance signal strength is below the selectable, predetermined level, the semiconductor arrangement is switched to its conductive state by a control network in response to control signals representative of the chrominance signal strength. In its conductive state, the semiconductor arrangement presents an alternate low impedance current path to the chrominance-modulated current diverting it from the differential amplifier and thereby preventing chroma reproduction.

3,755,619
AUTOMATIC COLOR SATURATION CONTROL RESPONSIVE TO AMBIENT LIGHT LEVEL

John D. Lovely, Waterloo, and Sam Q. Wong, Kitchener, Ontario, both of Canada, assignors to Electrohome Limited, Ontario, Canada

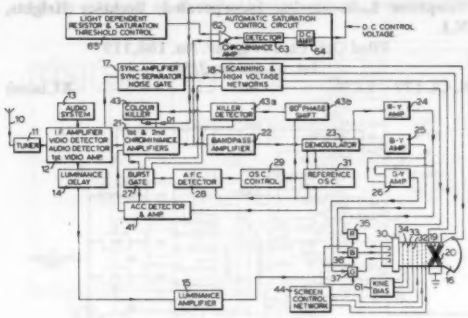
Filed June 9, 1972, Ser. No. 261,229

Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 AC **10 Claims**

An automatic saturation control system includes an A.G.C. system for the chrominance signal that maintains an essentially constant saturation level. This level is varied automati-

cally by a device such as a light dependent resistor in response to changes in light incident on the light dependent resistor, the

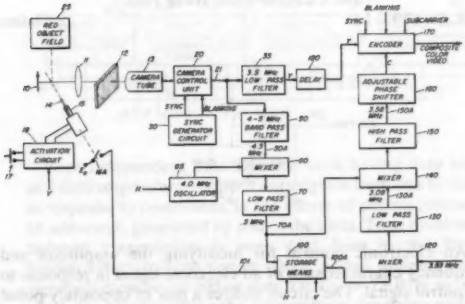


latter being mounted to receive ambient light on the picture tube screen and/or light emitted from the picture tube screen.

3,755,620
SINGLE TUBE COLOR TELEVISION CAMERA SYSTEM AND METHOD

Renville H. McMann, New Canaan, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 30, 1972, Ser. No. 267,988
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 20 Claims

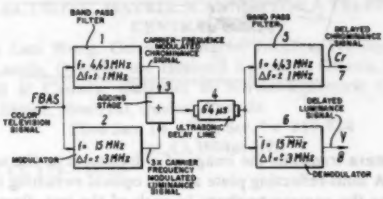


A color television camera system for producing coherent chroma video signals representative of the color content of a scene. A filter is disposed in the optical path of the scene, the filter having a striped array of colored areas thereon. A single camera tube electronically scans the image projected through the filter and generates color signals representative of the filtered image. The color signals are translated to a lower frequency. Means are provided for projecting, during selected field scans, a uniformly colored field on said filter. The translated color signals generated during the selected field scans are stored in a digital storage circuit. Subsequently, the translated color signals generated during non-selected fields are modified in accordance with the stored signals to produce coherent chroma signals.

3,755,621
METHOD FOR DELAYING WIDE BAND ELECTRICAL SIGNALS

Wolfgang Dillenburger, Nieder-Ramstadt, and Gerhard Krause, Ebersberg/Munich, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed Aug. 20, 1970, Ser. No. 65,446
Claims priority, application Germany, Aug. 20, 1969, P 19 42 290.3
Int. Cl. H04n 9/00, 5/14; H03h 7/30
U.S. Cl. 178—5.4 R 10 Claims

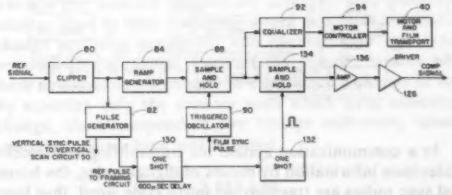


A method for increasing the bandwidth of delay devices which operate to delay a modulated carrier wave. The frequency of the carrier is raised to an odd multiple of the fundamental frequency of the input and output transducers of the delay device, allowing operation over a wider bandwidth.

3,755,622
FILM SCANNING SYSTEM HAVING IMPROVED VERTICAL STABILITY

Harvey M. Horowitz, Easton, and Renville H. McMann, Jr., New Canaan, both of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,786
Int. Cl. G11b 15/52; H04n 5/36, 5/86
U.S. Cl. 178—7.2 7 Claims



An electronic film scanning system dynamically compensated for the effects of instabilities caused by variable film speed, and/or variations in spacing between successive film frames and associated sync marks. Sync information derived from the film in phase-locked to a reference by a film transport servo drive, and a compensation signal proportional to the dynamic phase error of the servo is produced to maintain the alignment between a scanning raster and film frame position.

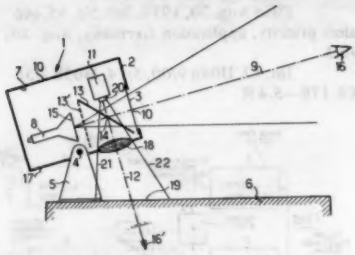
3,755,623
COMBINED TELEVISION CAMERA AND A TELEVISION RECEIVER UNIT

Pierre Cassagne, Rueil, France, assignor to Engins Matra, Paris, France

Filed Oct. 19, 1971, Ser. No. 190,513
Claims priority, application France, Oct. 22, 1970, 7038142
Int. Cl. H04n 5/26, 5/655
U.S. Cl. 178—7.89 7 Claims

A combined television camera and receiver unit for transmitting and receiving images to and from a similar unit located at a distance therefrom.

The unit is housed in a case which is pivotally mounted on a base and fixed to a support. The television camera is capable of shooting along two substantially perpendicular directions. In a first direction the television camera transmits the image of the first party to the second party and in the other direction



the camera transmits the image of a document to the second party. A semi-reflecting plate acts an optical switching means enabling the camera to shoot in each of the two directions. The camera is preferably mounted parallel or perpendicular to the picture tube depending whether or not a mirror is used.

3,755,624

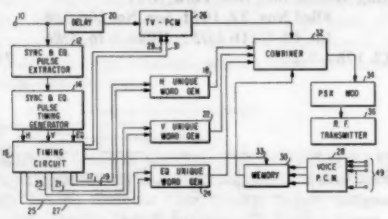
PCM-TV SYSTEM USING A UNIQUE WORD FOR HORIZONTAL TIME SYNCHRONIZATION

Tadahiro Sekimoto, Tokyo, Japan, assignor to Communications Satellite Corporation, Washington, D.C.

Division of Ser. No. 740,310, June 26, 1968, Pat. No. 3,666,888. This application Apr. 22, 1971, Ser. No. 136,582

Int. Cl. H04n *5/04*

U.S. Cl. 178—69.5 TV **9 Claims**



In a communication system for transmitting and receiving television information by means of digital codes, the horizontal sync pulses are transformed into a code word, thus leaving time slots in the transmitted waveform which are unoccupied by the digital picture information or the code word representing horizontal synchronization. These time slots are used to transmit additional information such as multiple sound or data channels, or bandwidth compression information. In the case of multiple sound or data channels, the channels are multiplexed and coded and transmitted during the available time slots at a bit rate which is the same as the digital picture information bit rate. In the case of bandwidth compression, an address code word is annexed to the single horizontal synchronization code word to provide an address for each line of picture information in a television frame. With all lines identified by addresses, the system compares each line of picture information with a prior line of picture information having the same address and transmits to the receiver only those lines which represent changes of a certain degree from a prior frame. As a result, redundant picture information is not transmitted thereby reducing the total amount of information transmitted, allowing the transmitter to operate at a reduced bit rate. The receiver stores all lines of information and the storage is up-dated by the received non-redundant lines of picture information. During each frame period, the receiver extracts from storage the redundant lines necessary to complete a picture frame.

3,755,625

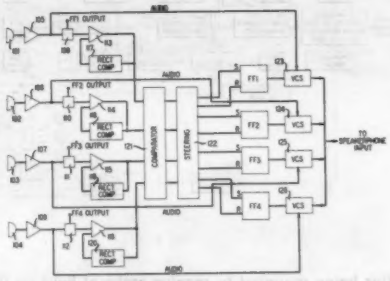
MULTIMICROPHONE LOUDSPEAKING TELEPHONE SYSTEM

Donald James Maston, West Lafayette, Ind., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Oct. 12, 1971, Ser. No. 188,119

Int. Cl. H04m *3/56*

U.S. Cl. 179—1 CN **8 Claims**



A modified speakerphone conference system with a plurality of microphones employs a comparator in combination with logic circuitry that selects the microphone with the greatest output and connects it to the speakerphone input while simultaneously disconnecting the others. In the absence of other inputs, a microphone that has control retains control despite pauses. Control can be seized, however, by any microphone with an overriding signal. Switching and the transmission of background noise are both minimized.

3,755,626

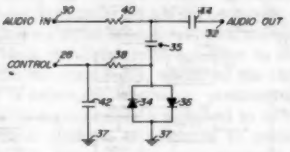
ELECTRONIC CONTROL CIRCUIT

Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 17, 1971, Ser. No. 209,050

Int. Cl. H04r *3/00*; H03g *1/02*

U.S. Cl. 179—1 D **2 Claims**



An electronic control for modifying the amplitude and frequency characteristics of an electrical signal in response to a control signal. The circuit utilizes a pair of oppositely poled parallel coupled semiconductor diodes the impedance of which changes in response to control current flowing therethrough. The oppositely poled configuration allows control signals of either positive or negative polarity to serve as control voltages for modifying the alternating current signal.

3,755,627

PROGRAMMABLE FEATURE EXTRACTOR AND SPEECH RECOGNIZER

Sidney Berkowitz, Silver Spring, Md., and James R. Carlberg, McLean, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

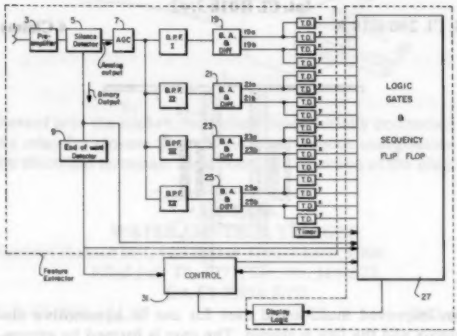
Filed Dec. 22, 1971, Ser. No. 210,803

Int. Cl. G10l *1/02*

U.S. Cl. 179—1 SA **14 Claims**

A spoken word is analyzed to determine its power spectrum density and slope-intensity product. The recognizer then

identifies the word by its unique density and slope-intensity characteristic. The analysis is accomplished through bandpass filters and differentiators which generate signals corresponding to the power spectrum density and slope-intensity product and by a bank of threshold gates which generates binary



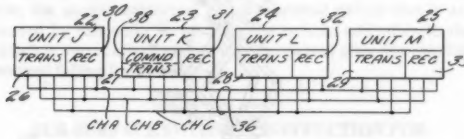
signals when the power density and the slope-intensity signals are above preset threshold levels. The threshold signals produced are processed through a logic system which indicates which word has been spoken when a unique combination of threshold signals corresponding to a particular word have been triggered.

3,755,628

TIME DIVERSITY, MULTI-REDUNDANT DATA SYNCHRONIZED TRANSMISSION SYSTEM

John E. Games, Granby; John Saunders, East Hartford, and Ivor Hughes, Granby, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 4, 1970, Ser. No. 95,231
Int. Cl. H04g 7/04; H04m 3/00
U.S. Cl. 179—15 BS **6 Claims**



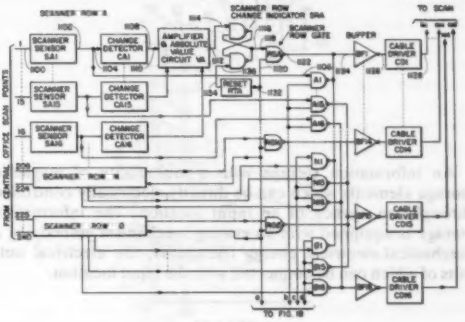
Four independent data stations, each having data sources and data responders, transmit data signals from one to another in response to commands, in the nature of polling instructions or addresses, generated by one of the units. Time division multiplexed transmission is over dual lines in the form of bipolar/return-to-zero signals which permit utilizing discrete signals indicative of either data ONEs or ZEROs as a data clock for synchronizing the transmitting, receiving and command stations. Counters indicate completion of transmission of fixed formatted groups of data words, and monostable multivibrator time outs are used to sense times between words, between multiword transmission and reception periods, and between frames of transmission periods. The receiver of each unit recognizes the unit designations of each command, causing that unit to transmit or receive when it is involved, and preventing that unit from recognizing further data signals when it is not involved. Substantially every part of each of the units, including the command section of one of the units, is provided in triple redundancy, there also being provided three independent, bipolar/return-to-zero data channels. One of the data channels is provided with a two word delay at the output of each transmitter and no delay at the input to each receiver; a second data channel is provided with a one word delay at the output of each transmitter and a one word delay at the input to each receiver; and the third data channel is provided with no delay at the output of each transmitter and a two word delay at the input to each receiver; thus the actual transmission is provided with time diversity, whereby noise, such as a flash of lightening might generate, effects only one word out of the three redundant words being transmitted since the other two words are diverse in time from the generated noise. Data, and certain of the functions for controlling the units, are majority-voted so that the data or control indicium is taken to be that for which two out of the three redundant sets indicate likeness.

3,755,629

ELECTRONIC MATRIX SCANNER FOR A TELEPHONE CENTRAL OFFICE

Cho Lun Wong, Ottawa, Ontario; Glenson Trevelyn Jones, Kanata, Ontario, and Helmuth Krausbar, Ottawa, Ontario, all of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Jan. 14, 1972, Ser. No. 217,924
Int. Cl. H04m 3/22
U.S. Cl. 179—18 ES **7 Claims**



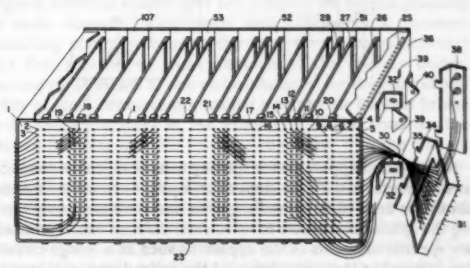
An electronic scanner for use in a telephone central office wherein the scanner sensors are arranged in a plurality of scanner rows to form a scanner sensor matrix. A scanner row change indicator associated with each scanner row detects and registers a change if any of the scanner sensors which form its associated scanner row experience a change of state. By scanning only the scanner rows which have indicated a change, via corresponding row change indicators, valuable central processor time may be saved.

3,755,630

WIRED EQUIPMENT SHELF

Michel Boyer, Longueuil, Quebec, Canada, assignor to Bell Canada, Montreal, Quebec, Canada

Filed June 3, 1971, Ser. No. 149,484
Int. Cl. H05k 1/07
U.S. Cl. 179—98 **17 Claims**



A mounting shelf for plug-in telephone line equipment is prewired to receive various kinds of vertical circuit board

units in a horizontal array. The prewiring gives the options of either arranging in one shelf unit several sequences individual to particular telephone lines, of a few circuit units each, or else placing an ordinary circuit unit in one or more of the available circuit division locations to build longer circuit sequences for some or all of the lines.

3,755,631

MANUAL ERASE MECHANISM FOR MAGNETIC RECORD

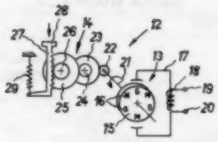
Oskar Sturzinger, Baar, Switzerland, assignor to Anstalt Europaische Handelsgesellschaft, Vaduz, Liechtenstein

Filed Nov. 9, 1971, Ser. No. 196,990

Claims priority, application Switzerland, Dec. 14, 1970, 1852/70

Int. Cl. G11b *5/02*

U.S. Cl. 179—100.2 D **5 Claims**



An information storage with a multiplicity of magnetic storage elements which can be directly electrically controlled through the agency of an input location. The information storage is equipped with an erasing mechanism embodying a mechanical-electrical energy transducer, the electrical outputs of which can be connected with the input location.

3,755,632

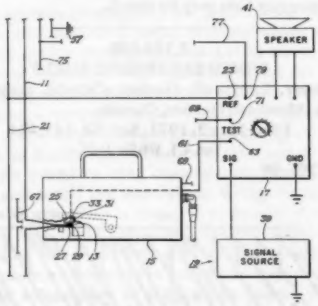
APPARATUS FOR SIMULTANEOUSLY JOINING AND TESTING CONDUCTORS

Paul Johnson, Lakewood, Colo., assignor to A. P. C. Industries, Inc, Mineral Wells, Tex.

Filed Aug. 17, 1971, Ser. No. 172,522

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 **10 Claims**



Method and apparatus for splicing telephone cable conductors characterized by the steps of crimping a connector means about the ends to be joined together and simultaneously testing the spliced conductor for electrical defects. Also disclosed are specific elements of the apparatus such as a bridge circuit for comparing the capacitance of the spliced wire pair that is being tested with that of a reference wire pair that is similar in character and traverse and is known to be free of the electrical defects.

3,755,633

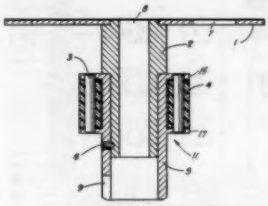
NO MISS FIRE ROLLER CAM FOR AUTOMOTIVE DISTRIBUTOR ASSEMBLIES

Warren John Rhinesmith, Union Valley Rd., Box 225, West Milford, N.J.

Filed Dec. 7, 1971, Ser. No. 171,182

Int. Cl. H01h *3/42*

U.S. Cl. 200—19 R **4 Claims**



An improved multi-lobed cam for use in automotive distributors and the like is shown. The cam is formed by arranging a plurality of rollers in a circle with the rollers providing the cam lobes and spaces therebetween the cam flats so that wobble of the cam will have no effect on the cam follower when it is in the spaces thus preventing the points from opening at the wrong time and causing a miss-fire.

3,755,634

SINGLE PILLAR ISOLATOR SWITCH

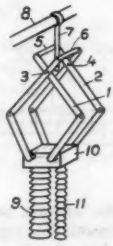
Sven Bachler; Sven Erik Akervall, and Sven Wallenstein, all of Ludvika, Sweden, assignors to Allmanna Svenska Elktriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 7, 1972, Ser. No. 223,924

Claims priority, application Sweden, Feb. 12, 1971, 1847/71

Int. Cl. H01h *31/00*

U.S. Cl. 200—48 V **6 Claims**



In a high voltage isolator switch of the pantograph type, a movable contact of the pivoted tong type cooperates with a counter-contact in the form of a rod suspended vertically from an overhead line. This rod is adapted to be gripped by two substantially horizontally directed elongated contact bars carried by the movable contact. The counter-contact may be provided with longitudinally extending current collecting strips, two on one face and one on the other face. A downwardly-open guiding means secured to the counter-contact guides the contact bars into engagement with the counter-contact.

3,755,635

ISOLATED ELECTRICAL OUTLET ASSEMBLY

William B. McGill, 9612-B Roosevelt Dr., Ellsworth A.F.B., S. Dak.

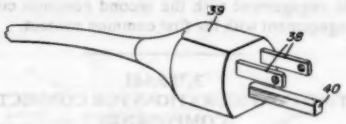
Filed Apr. 7, 1972, Ser. No. 241,999

Int. Cl. H01r *33/30*

U.S. Cl. 200—51.09 **3 Claims**

An electrical outlet and safety control circuit for preventing accidental shock comprising a socket with a pair of outlet ter-

minals isolated from a primary voltage source by normally opened relay contacts, and a switch actuatable by an elongated pin on the associated electrical plug upon insertion



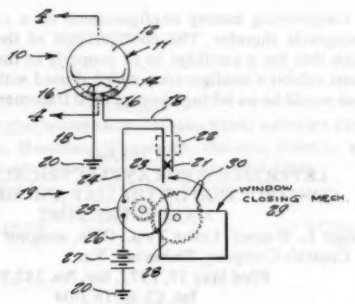
thereof into the socket, the switch being serially connected to the relay for closure thereof and simultaneous energization of the electrical terminals upon complete insertion of the plug.

3,755,636

WATER CONTROL TRIGGER

Herbert Hoover Hill, 919 Starer Ave., Akron, Ohio

Filed July 27, 1971, Ser. No. 166,522
Int. Cl. H01h 9/00
U.S. Cl. 200—61.05 **2 Claims**



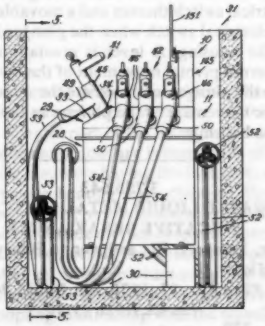
A control device for automatically closing a window of a house or automatically raising a roof of a convertible automobile, the device consisting of an electrical switch that is activated by rainwater so to close the switch; and wherein the switch is automatically becomes deactivated after the rain has stopped falling for awhile.

3,755,637

SUB-SURFACE SWITCH CONSTRUCTION FOR UNDERGROUND ELECTRIC POWER DISTRIBUTION

John A. Gloviak, Chicago, and Gerald Sakats, Arlington Heights, both of Ill., assignors to S. & C. Electric Company, Chicago, Ill.

Filed May 15, 1972, Ser. No. 253,503
Int. Cl. H02b 1/12; H01h 3/36
U.S. Cl. 200—168 G **10 Claims**



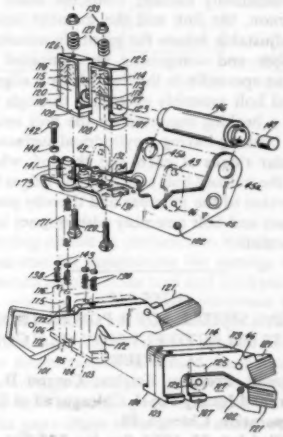
A rectangular tank has a rectangular cover secured thereto in fluid tight relation for mounting in a sub-surface vault likely to be flooded. Insulator through bushings are mounted on inclined end portions and one inclined side portion for supporting terminals extending into the space enclosed by the tank and cover. A switching assembly is enclosed by the tank and cover. It comprises stationary contacts connected to the end and side terminals. The contacts are engageable by commonly connected switch blades. Spring operators are connected to the switch blades and remotely operated on pivotal movement of horizontal shafts projecting from a conning tower which extends upwardly from the cover to one side thereof. Indicators on the projecting ends of the shafts show the open or closed position of the switch individual thereto.

3,755,638

CONTACT PRESSURE ADJUSTING MEANS

John C. Lucas, Cherry Hill, N.J., and William A. Huggins, Lansdowne, Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed July 27, 1972, Ser. No. 275,446
Int. Cl. H01h 9/38, 33/12
U.S. Cl. 200—146 R **12 Claims**



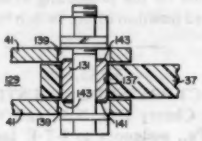
A multiphase air magnetic circuit breaker of very high continuous current rating is provided with a compact movable contact structure for each phase thereof by having a first plurality of main contacts positioned in a first transverse row adjacent to and in front of a second plurality of main contacts positioned in a second transverse row. These main contacts are symmetrically arranged on each side of the arcing contact arm, and the arms for the first plurality of main contacts are aligned with and extend over the arms for the second plurality of main contacts. First pivot means provides a common mounting pivotally securing the arms for the arcing contact and first plurality of main contacts to the contact bridge. Second pivot means at one end of the arms for the second plurality of main contacts mounts the latter to the contact bridge and auxiliary bridges at the other end of the arms for the second plurality of main contacts cooperate with the contact bridge to establish the open circuit position for the second plurality of main contacts. Engagement of the first and second pluralities of contacts establishes the open circuit position of the former, and engagement between the second pivot and the arcing contact arm establishes the open circuit position of the latter. Individually adjustable biasing springs are provided for each contact of the first plurality of main contacts, and individually adjustable springs are provided for each section of the auxiliary bridge.

3,755,639

CIRCUIT INTERRUPTER WITH CONTACT ACTUATING LEVER ARM ADJUSTING MEANS

Fred Bould, Swissvale, and Norman Davies, Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 13, 1972, Ser. No. 271,426
Int. Cl. H01h *3/46, 3/30*; G05g *1/24*
U.S. Cl. 200—153 H **16 Claims**



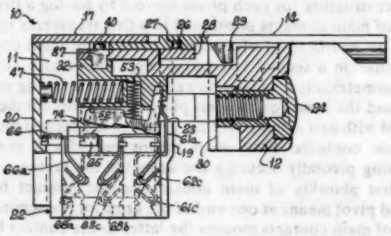
A circuit interrupter having relatively movable contacts, means for moving the contacts between open and closed positions which means include a support arm for the movable contact, a rotatable operating shaft, a drive structure between the shaft and the arm including a connecting link and a member extending substantially radially from the shaft and fixedly mounted thereon, the link and the member being pivotally connected, adjustable means for pivotally mounting the link on the member and comprising an elongated slot in the member and an aperature in the link which is aligned with the slot, a nut and bolt assembly extending through the slot and aperture and a bushing mounted on the bolt and within the aperture, the bushing having a cylindrical surface and having tapered annular ridges at each end thereof, whereby upon tightening of the nut and bolt assembly the ridges bite into the bifurcated portion of the member and thereby prevent movement of the nut and bolt assembly with respect to its desired location in the slot.

3,755,640

REVERSING SWITCH FOR A POWER TOOL WITH SEPARATE SELECTIVELY MOVABLE CONTACT CARRIERS

Frank A. Kaman, Prospect Heights; Conrad D. Robertson, Northbrook, and Ignacy Supel, Chicago, all of Ill., assignors to Skie Corporation, Chicago, Ill.

Filed July 27, 1972, Ser. No. 275,701
Int. Cl. H01h *13/08*
U.S. Cl. 200—157 **10 Claims**



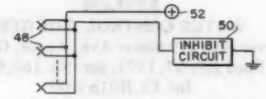
A common contact is arranged for connection to one of the two lines of an electric power source; a second common contact is arranged for connection to the field windings of the motor. A pair of contact strips is arranged for respective connection to the sides of a motor armature which is wound for rotation in both directions. A pair of movable contacts is mounted by a respective pair of contact carriers for slidable engagement with the contact strips. A reversing arm actuates a shuttle for connecting a selected one of the contact carriers for movement by the trigger from an "off" position wherein the associated movable contact is in engagement with the first common contact and out of engagement with the second common contact to an "on" position wherein said movable contact is in engagement with the second common contact and out of engagement with the first common contact.

3,755,641

MATING CONFIGURATIONS FOR CONNECTABLE COMPONENTS

Michael I. Rackman, 1710 Glenwood Rd., Brooklyn, N.Y.

Filed Feb. 5, 1970, Ser. No. 9,001
Int. Cl. H01h *1/38*
U.S. Cl. 200—163 **10 Claims**



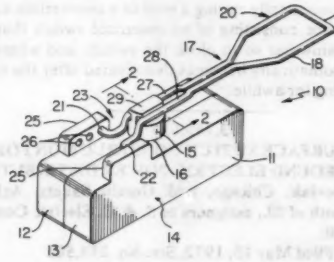
Cooperating mating configurations on a cartridge and a receptacle therefor. The configuration of the receptacle is such that for a cartridge to fit properly in the receptacle, it must exhibit a configuration which if used without authorization would be an infringement of legal trademark rights.

3,755,642

LEVER MEANS FOR AN ELECTRICAL SWITCH CONSTRUCTION OR THE LIKE AND METHOD OF MAKING THE SAME

Roger L. Warner, Union Twp., Ohio, assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 17, 1972, Ser. No. 253,999
Int. Cl. H01h *3/04*
U.S. Cl. 200—172 A **15 Claims**



An electrical switch construction having a housing provided with an electrical switch therein and a movable plunger for actuating the electrical switch when the plunger is axially moved relative to the housing. A lever is pivotally mounted to the housing to permit pivotal movement of the lever and the lever is secured to the plunger intermediate the opposed ends of the lever to cause movement of the plunger as the lever is pivoted relative to the housing.

3,755,643

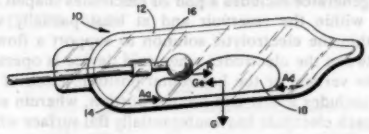
TILT ACTUATED LIQUID METAL SWITCH HAVING A NEGATIVE BREAK ANGLE

Carl D. Blair, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 23, 1970, Ser. No. 31,243
Int. Cl. H01h *29/20*
U.S. Cl. 200—220 **4 Claims**

A tilt actuated liquid metal switch of the liquid metal to electrode type including a depressor arranged to be in engage-

ment with the pool of liquid metal which is located on a surface of the switch normally maintained in a substantially horizontal position so as to interact with the surface tension of



the pool and thereby provide a force in the deactuating mode of the switch such that it is adequate to overcome the other inherent forces to cause disengagement of the pool from the electrode prior to the horizontal position being attained.

3,755,644

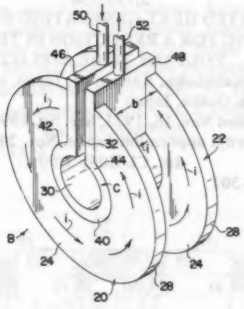
HIGH FREQUENCY INDUCTION HEATING APPARATUS

John C. Lewis, Hamilton, Wentworth, Ontario, Canada, assignor to Growth International, Inc., Cleveland, Ohio

Filed June 27, 1972, Ser. No. 266,603

Int. Cl. H05b *5/18*

U.S. Cl. 219—10.79 **2 Claims**



An apparatus for high frequency induction heating of elongated workpieces wherein the induction heating inductor is mounted as an integral part of the transformer secondary portion. The transformer secondary is comprised of one or more spaced apart disc members having the inductor, which defines a desired workpiece heating pass, disposed therein and extending therebetween. The transformer secondary portion is releasably retained between a pair of spaced apart transformer primary pancake coils with one of the coils positioned in a magnetic coupling relationship with each of the disc members. The transformer secondary portion is easily removable from its magnetic coupling relationship with the transformer primary so as to permit selective use of other secondary portions which include inductors defining different sized workpiece passes.

3,755,645

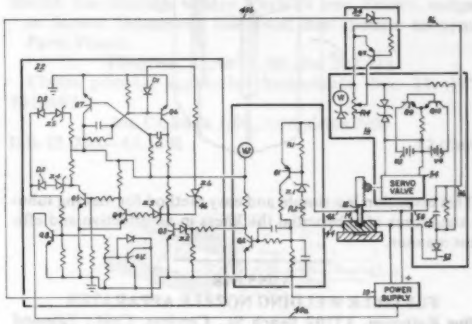
MAXIMUM AVERAGE GAP VOLTAGE CONTROL FOR EDM POWER SUPPLY

Harry D. Kauffman, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 21, 1972, Ser. No. 246,157

Int. Cl. B23p *1/08, 1/14*

U.S. Cl. 219—69 C **4 Claims**



A gap sensing circuit in conjunction with an inhibit circuit defines apparatus for maintaining the average voltage across the gap between an electrode tool and workpiece of an EDM mechanism within a predetermined maximum level. The gap sensing circuit monitors the peak voltage present across the gap, and enables an inhibit circuit to produce a signal suppressing the production of sustained machining pulses when the average voltage across the gap exceeds a predetermined maximum level. The sensing network disables the inhibit circuit when the gap voltage returns to an acceptable level.

3,755,646

METHOD AND DEVICE FOR BALANCING ROTORS

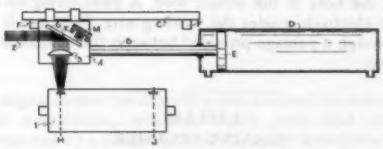
Richard Muller, Worfelden, Germany, assignor to Gebr. Hofmann KG, Postfach, Germany

Filed July 2, 1971, Ser. No. 159,444

Claims priority, application Germany, July 2, 1970, P 20 32 893.2

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 LM **22 Claims**



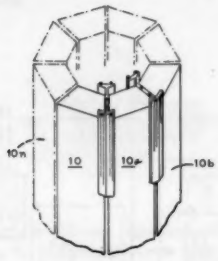
The invention relates to a method and device for balancing rotors where the unbalance is eliminated step by step during rotation of the rotor through momentary periodical bombardment by laser beams of high intensity.

3,755,647

METHOD FOR MAKING A TUBULAR STRUCTURE

Robert M. Pierart, Saint-Nazaire, France, assignor to Babcock-Atlantique, Paris, France

Filed Feb. 17, 1972, Ser. No. 227,689
Claims priority, application France, March 30, 1971, 7111049
Int. Cl. B23k *9/12*
U.S. Cl. 219—126 **7 Claims**



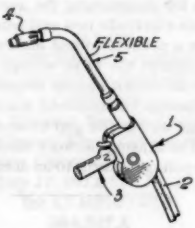
This invention is a simple and easy method for making tubular structures of substantial thickness in an effective and efficient manner.

3,755,648

FLEXIBLE WELDING NOZZLE APPARATUS

Julius Rothman, 13702 Beach St., Cerritos, Calif.; Edmond Andrew Tacconelli, 5456 Abbeyfield St., Long Beach, Calif., and Frank Vincent Buzzetta, 11399 Pinetree Ln., Stanton, Calif.

Filed Sept. 5, 1972, Ser. No. 285,967
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **5 Claims**



The nozzle of an inert gas arc-welding gun is flexibly extended by coupling an elongate, tubular electrode between the body of the gun and its nozzle. The electrode is formed of spirally-wound conductive wire capable of being bent into any desired configuration needed for the particular job and of retaining its set disposition. A sleeve binds the wound wire electrode to maintain its circularity during bending and insulation is provided around the sleeve. Welding current is carried by the wire and the welding metal in wire form is passed through the bore of the wound wire. A steel spring co-axial with the electrode guides the welding wire. Inert gas is supplied through a passage provided between the insulation and the sleeve.

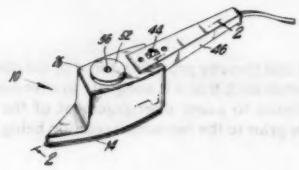
3,755,649

SERVING STEAMER

Leonard Osrow, Great Neck, N.Y., assignor to Osrow Products Co., Inc., Glen Cove, N.Y.

Filed Feb. 2, 1972, Ser. No. 222,898
Int. Cl. D06f *75/08*
U.S. Cl. 219—245 **5 Claims**

A light weight portable hand manipulatable pressing/steaming device having a reservoir formed therein to be at least partially filled with an electrolytic solution. The steaming device includes a steam generator, passageway means leading from said generator for receiving steam therefrom and conducting it to an exit thereof, and a sole plate having an opening therein in communication with the exit of the passageway means so that steam created in the generator will issue through the sole plate. The generator includes a pair of electrodes shaped and positioned within the reservoir and at least partially submerged within the electrolytic solution to support a flow of current between the electrodes when said device is operated in either the vertical or the horizontal position. Each of the electrodes includes a first and second portion, wherein each portion of each electrode has a substantially flat surface which



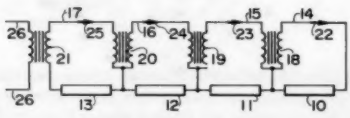
is so positioned within the reservoir that as the level of the solution recedes below the flat surfaces, a meniscus is formed between the solution and the flat surface of the first portions if the device is being operated in the horizontal position and with the flat surface of the second portions if the device is being operated in the vertical position. The device has an opening in a top wall thereof and a cap detachably engaged therewith for sealing the opening. The cap has a depression formed therein for measuring the quantity of salt to be added to water when forming the electrolytic solution. A baffle is positioned within the device adjacent the opening for preventing the electrolytic solution from accidentally draining out of the opening when the device is being operated in either of the vertical and horizontal positions.

3,755,650

ELONGATED HEAT-GENERATING APPARATUS PROVIDING FOR A REDUCTION IN THE HIGHEST VOLTAGE TO BE APPLIED

Masao Ando, Kahokuku, Kanagawa, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Nov. 16, 1971, Ser. No. 199,192
Claims priority, application Japan, Nov. 20, 1970, 45/102479
Int. Cl. H05b *3/00*
U.S. Cl. 219—301 **5 Claims**

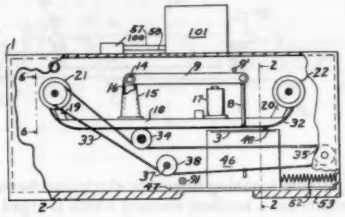


An elongated heat-generating apparatus is divided into at least two sections and a transformer is provided at each division between adjacent sections of said at least two sections and linked with the electrical circuits of the adjacent sections. The output voltage of the transformer is as near as possible to the highest voltage allowed for the section, the resistance of which is adjusted in relation to the definite voltage to meet the required quantity of heat in that section.

3,755,651
APPARATUS FOR AND METHOD OF MAKING CONDUCTIVE RECORD CARDS

Robert L. Giuliani, 45310 Akimala Pl., Kaneohe, Hawaii

Continuation-in-part of Ser. No. 118,329, Feb. 24, 1971. This application Sept. 27, 1971, Ser. No. 183,940
Int. Cl. G06k 7/06, 1/00
U.S. Cl. 235—61.1 8 Claims

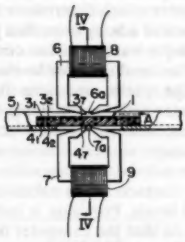


Errors are avoided by marking credit cards with machine-readable spot arrays in a computer controlled machine. A card is placed in a tray on a movable block. The block is stepped row by row according to the number of rows on the credit card. Solenoids controlled by a computer selectively strike a tape to a card, transferring a machine readable material to the card. The number of punches corresponds to the number of available spaces in each row. The unique spot arrays are exact duplicates of binary record identifiers in the controlling computer. When the cards are subsequently read, the array directs the computer logic to the correct record among voluminous records, and the computer accesses the information therein.

3,755,652
CODE READING METHOD AND APPARATUS

Takashi Endo, Tarumi-ku Kobe; Hironobu Yamamoto, Suma-ku, Kobe, and Yasuhiko Nohara, Kohoku, Yokoama, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Nihon Doro Kodan, Tokyo, Japan

Continuation of Ser. No. 845,799, July 29, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,734
Claims priority, application Japan, Aug. 8, 1968, 45/55984
Int. Cl. G06k 7/08
U.S. Cl. 235—61.11 D 9 Claims

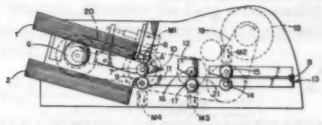


In a code read-out method and apparatus, a code carrier is in the form of a circular plate of non-magnetic material having, on one surface, clock indicia in the form of concentric, uniformly spaced annular bands of magnetic material and having, on the opposite surface, signal indicia in the form of concentric, selectively spaced annular bands of magnetic material, each opposite a different respective clock indicia. The code carrier is passed along a detection path and between a pair of magnetic picktup heads which are disposed directly opposite each other, and each of which is associated with a different respective surface of the plate. Both heads are connected in parallel to an AND circuit and to an OR circuit. The OR circuit provides an output pulse responsive to detection of an indicia on either surface of the plate. The AND circuit provides an output pulse responsive only to simultaneous detection of indicia on both surfaces of the plate. Thereby, the output clock pulses are readily discriminated from the output signal pulses. Preferably, the magnetic material is imbedded in annular channels in the plate surfaces.

3,755,653
RECORD CARD READING APPARATUS

Hilrich Jan Matthijs Venker, Paris 20 eme, France, assignor to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France

Filed Dec. 13, 1971, Ser. No. 207,441
Claims priority, application Netherlands, Dec. 21, 1970, 7018602
Int. Cl. B65k 1/06, 5/06; G06k 7/00
U.S. Cl. 235—61.11 R 12 Claims

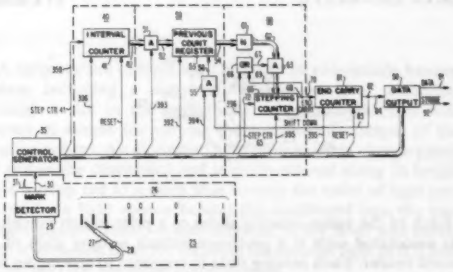


A record card reading apparatus of the type wherein cards are transported from a supply hopper to a reading track, are read, and then transported to a receiving hopper, wherein the receiving hopper is located under the supply hopper, and wherein the cards are found in the receiving hopper in the same order as they were first stacked in the supply hopper.

3,755,654
DIGITAL DECODING OF RETROSPECTIVE PULSE MODULATION

Francis Charles Dellacato, Lake Katrine, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1972, Ser. No. 276,337
Int. Cl. G06k 7/00
U.S. Cl. 235—61.11 E 8 Claims



A digital system for decoding data encoded by retrospective pulse modulation, wherein binary ones and zeros are represented by a comparison of the space between a first and second mark with the space between a second and third mark. A counter accumulates a current count representative of the elasped time between the sensing of a first mark and a second mark. This count is stored in a register as the previous count while a new current count is accumulated representative of the elasped time between the sensing of the second mark and a third mark. Concurrent with the accumulation of the new cur-

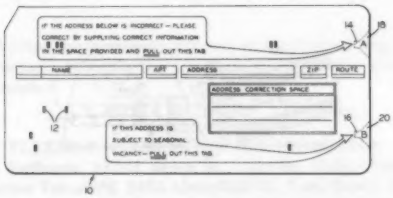
rent count, the ones complement of the previous count is loaded into a stepping counter, stepped until an end carry occurs, and then repeatedly reloaded and stepped until the new current count has been accumulated. If more than a predetermined number of end carries takes place during the accumulation of the new current count, a signal indicates that a long space is present between the second and third marks. The presence or absence of this signal, compared with its presence or absence after the second mark was sensed, is indicative of whether a binary one or a binary zero is represented.

3,755,655

MACHINE PROCESSED DATA CARD

Eugene G. Senecal, Windsor, Conn., assignor to TAC Industries, Inc., New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,372
Int. Cl. G06k *19/06*
U.S. Cl. 235—61.12 R **3 Claims**



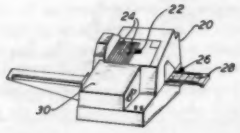
A machine processed data card is provided with a manually removable section which when removed creates an aperture that can be read by a processing machine. The removable section may be connected to a peripheral pull tab and both the section and the tab are joined to the rest of the card along lines of weakening so that a person not having the normal facilities for imposing information on the data card can remove the tab and section manually to either create new data or to indicate that the data should be changed.

3,755,656

DATA PROCESSING SYSTEM

Edward C. Marshall, Upper Montclair, and Paul E. Stanford, Bloomfield, both of N.J., assignors to Litton Business Systems, Inc., New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,231
Int. Cl. B44b *5/00*; G06k *1/20*, *7/04*, *19/06*
U.S. Cl. 235—61.11 C **11 Claims**



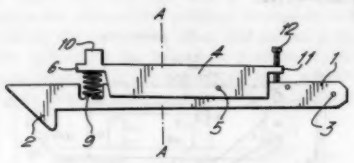
Each of the value entering slides of a print-punch machine has associated with it a perforate indicia sensing slide of a record reader. Each sensing slide in response to sensing an indicia, during relative movement between the sensing slide and the data record, is either slid proportionate to the value of the indicia sensed or set to a position permitting manual operation of the associated print-punch value entering slide. Any sliding movement of the indicia setting slides results in a corresponding movement of the associated print-punch value entering slides. A checking means determines that the data record has been properly read by moving into a space which is open when each indicia sensing member has either sensed an indicia in its column or is set to the manual entry position. When said space is blocked the checking means provides on indication that one or more sensing members has not functioned properly.

3,755,657

SCANNING FINGER FOR ELECTROMECHANICAL PUNCH CARD SCANNER

Fryderyk Kunz, Marmorveien 12, Oslo, Norway

Filed Sept. 27, 1971, Ser. No. 184,258
Int. Cl. G06k *7/04*
U.S. Cl. 235—61.11 C **5 Claims**



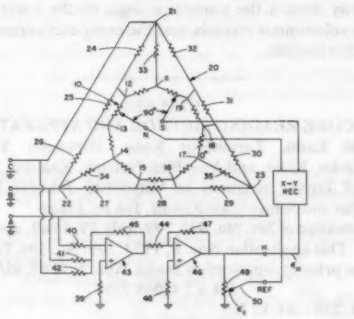
An adjustable scanning finger for electromechanical punch card scanners has a resilient element which is urged into contact with a microswitch actuator upon sensing movement of the rigid finger. Adjustment is carried out by means of a set screw.

3,755,658

ANALOG COMPUTER FOR PROCESSING DELTA ROSETTE STRAIN GAGE DATA

Robert M. Walters, 17 Princeton Rd., Burlington, Mass.

Filed June 2, 1972, Ser. No. 259,069
Int. Cl. G06g *7/48*, *7/22*
U.S. Cl. 235—151.3 **15 Claims**



An analog computer which determines the state of stress at a point on the surface of a body from data produced by a standard three-gage delta rosette. The computer solves this problem by use of an analog of Mohr circles rather than by direct solution of the rosette equations. Its circuit includes a circular potentiometer with two rotatable output contacts 90° apart which is interconnected at preselected points to a resistance triangle whose vertices correspond to those of the delta rosette. The normal and associated shear stress are available at these contacts when taken with respect to appropriate potential levels. Provision is included for changing one of these levels so that the computer may be utilized with materials having different Poisson's ratios.

3,755,659

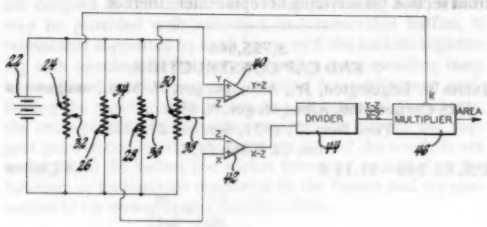
METHOD OF DETERMINING THE SURFACE AREA OF AN IRREGULAR SHAPE

John R. Bolhuis, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 15, 1972, Ser. No. 263,218
Int. Cl. B44c *1/22*; G01m *17/02*; G06g *7/16*
U.S. Cl. 235—151.3 **2 Claims**

The method of measuring the area of a tire print including the steps of making a photographic negative of the tire print,

weighing a circuit board having a full copper layer, etching away by a photoetching process the copper on the circuit board except for copper within the boundaries defined by the surface area to be measured to produce a copper pattern having an area equal to the area of the tire print, reweighing the



circuit board, removing the remaining copper on the circuit board, reweighing the circuit board with all the copper removed, and multiplying the ratio of the weight of the copper pattern to the total weight of the copper removed times the total area of the printed circuit board.

3,755,660

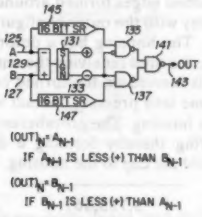
DIGITAL WORD MAGNITUDE SELECTION CIRCUIT APPARATUS

Delaine C. Sather, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Feb. 11, 1972, Ser. No. 225,444

Int. Cl. G06f *7/02*

U.S. Cl. 235—177 **8 Claims**



A circuit for selecting which one of a pair of binary digital serial word numbers are the least (or most) positive and providing an output indicative of this selected value. Two of these circuits may be used in series for providing an output which is always contained between two limits. The selection is accomplished by subtracting one of the digital numbers from the other and checking the answer. If the answer or difference is negative, the subtrahend is larger than the minuend. On the other hand, if the answer or difference is positive, the minuend is more positive than the subtrahend. A zero answer will indicate that both numbers are equal.

3,755,661

LUMINOUS SWITCHING KEY- OR PUSH-BUTTON

Andre Maurice Bouvrande, Boussey-Saint-Antoine, France, assignor to Societe de Telecommunications Electronique Aeronautique et Maritime "T. E. A. M.", Paris, France

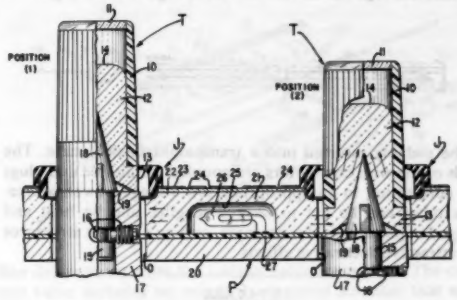
Filed Dec. 15, 1971, Ser. No. 208,298

Claims priority, application France, Dec. 24, 1970, 7046741

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 S **10 Claims**

A key- or push-button for controlling the switching on and off of at least one electrical circuit is provided with an elongated body extending through an aperture of a panel. The body and the panel are made essentially of transparent material covered with an opaque outer wall or coating, with the exception of the end of the body and of an annular root portion thereof registering with the aperture of the panel in one



switching position, whereby the light produced by a bulb incorporated to said panel is selectively transmitted to the end of the button.

3,755,662

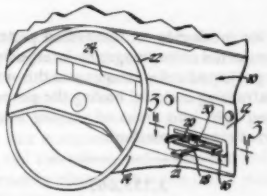
PHASE LIGHTING HEATER AND HEATER A/C CONTROL UNITS

Charles W. Ramsey, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 14, 1971, Ser. No. 162,394

Int. Cl. B60q *3/04*

U.S. Cl. 240—8.16 **1 Claim**



A temperature control indicator for an automobile heating system including a temperature selector lever extending through a slot in the automobile dashboard which is connected to means for varying the temperature output of the heating system. An elongated light filter extends along a parallel slot in the dashboard and is multi-colored along its length from a deep red to a deep blue to vary the color of light projected by a light source behind the dashboard into the passenger compartment. A lens is linked to the lever and moves with it along the filter for focusing the colored light as it is projected into the passenger compartment.

3,755,663

ELECTRICAL DISPLAY DEVICE AND METHOD OF MAKING THE SAME

Ben B. George, Jr., Santa Ana, Calif., assignor to Shelly Associates, Inc., Santa Ana, Calif.

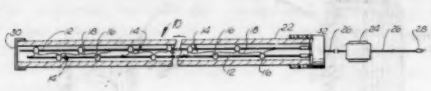
Filed Nov. 17, 1971, Ser. No. 199,489

Int. Cl. F21r *23/00*; H01j *5/00*

U.S. Cl. 240—10 R **6 Claims**

The display device has a plurality of low voltage unbased miniature lamps connected in series at spaced intervals to

form substrings which are coupled in parallel between a pair of elongated parallel wire conductors at spaced intervals corresponding to the length of the substrings. The assembly is collapsed in parallelogram fashion by bringing the parallel wire conductors together so that the substrings extend lengthwise



to be slidably inserted into a transparent flexible tube. The ends of the wire conductors are coupled to suitable end plugs for connection to an appropriate low voltage power source. The tubes can be cut to desired lengths, and be bent and shaped in patterns to, for example, outline different structures for attractive decorative effects.

3,755,664

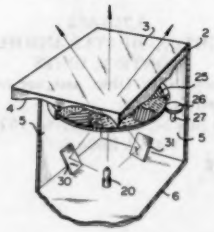
APPARATUS AND METHOD FOR PRODUCING REFRACTED COLOR IMAGES

Earl Martin Reiback, 20 E. 9th St., New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,844

Int. Cl. A47g *33/16*; F21p *1/02*

U.S. Cl. 240—10 R **11 Claims**



A method for producing an intensified pattern of continuous varying projected color images by interposing between the source of the projected color images and the viewing surface a transparent refracting material having the property of shaping the transmitted light into areas of varying intensity, and apparatus for practicing the method.

3,755,665

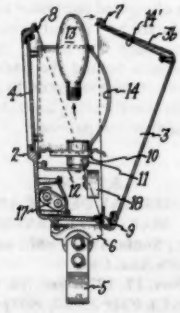
FLOODLIGHT

James L. Grindle, Hendersonville, N.C., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 174,399, Aug. 24, 1971, abandoned. This application Sept. 25, 1972, Ser. No. 291,781

Int. Cl. F21v *17/00*

U.S. Cl. 240—41.55 **10 Claims**



Floodlight housing is divided into front and rear sections along a diagonal line extending from the upper front edge to the lower rear edge of the housing. The rear section is hingedly connected at its bottom to the front section by means of a separable hinge device so that the rear section can be tilted back to allow access to the lamp for replacement thereof, and to enable the rear section to be entirely removed to permit full access to the electrical operating components mounted in the front section for servicing or replacement thereof.

3,755,666

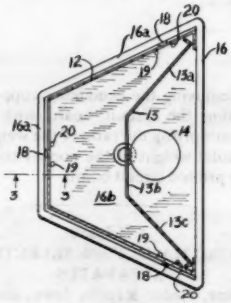
END CAP CONSTRUCTION

James N. Edgeington, Jr., Albuquerque, N. Mex., assignor to IMS Corporation, Albuquerque, N. Mex.

Filed Dec. 27, 1971, Ser. No. 212,231

Int. Cl. H05b *33/02*

U.S. Cl. 240—51.11 R **8 Claims**



An end cap structure comprises a housing portion formed of smooth sheet material having an open portion to be covered by an end cap. The end cap has a wall portion positioned over the opening and turned edges formed around the periphery of the cap in conformity with the outer configuration of the housing being covered. The housing has a deformable surface or covering, at least in the area receiving the end cap, and at least one protuberance is formed on the turned edges, at the inner side thereof, to come into pressing contact with the deformable covering on the housing. The protuberance will cause cold flow of the covering thereby forming a dimple under the protuberance to hold the cap to the housing.

3,755,667

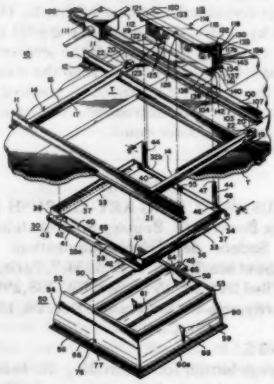
RECESSED LIGHTING STRUCTURE

Edison A. Price, New York, N.Y., assignor to The Mint Factors, New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,280

Int. Cl. H05b *33/02*

U.S. Cl. 240—51.12 **23 Claims**



A recessed lighting structure includes suspended spaced parallel beams interconnected by snap fastened pairs of lon-

gitudinally spaced cross-pieces extending across pairs of adjacent beams, and spaced frame members are supported by and releaseably locked to adjacent beams. Conductor-carrying longitudinal conduits are supported by the cross-pieces along corresponding frames, and ballast and lamp socket-carrying boxes are locked to the conduits along each frame and are coupled to the conductors. A lamp housing unit, which may be provided with reflectors and removable baffles, is releaseably supported by each frame with the sockets registering with openings in the unit to receive corresponding lamp bases. Locating elements are provided for guiding and positioning the various components. In alternative arrangements, the cross-pieces extend between successive frames and support pairs of conduits or the cross-pieces and the conduits are omitted and the ballast and socket boxes are mounted on the housings or on brackets supported by the frames and are connected to the power line by flexible cables.

3,755,668

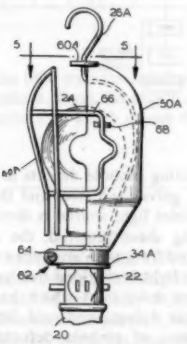
EXTENSION LAMP BULB GUARD AND REFLECTOR

Victor Moreschini, 1300 N. Santa Fe Ave., Pueblo, Colo.

Continuation-in-part of Ser. No. 67,714, Aug. 28, 1970, abandoned. This application Dec. 9, 1971, Ser. No. 206,299

Int. Cl. F21v *15/02, 21/00*

U.S. Cl. 240—54 A **6 Claims**



An extension lamp bulb guard and reflector of the type comprising a drop light, which includes a lamp bulb guard or cage unit and a suspension hook operatively associated with a handle and having a lamp bulb reflector. The hook is attached to a handle as a unit, and the reflector is mounted for independent rotation with respect to the unit. The unit consisting of the handle, guard, and hook, together with the associated extension cord, can be suspended from the hook, and regardless of stresses, tensions or torques on the cord, the reflector can be freely turned to focus the light on the work and out of a user's eyes, without the necessity of loosening or rearranging any parts with the exception of a free rotation or movement of the reflector.

3,755,669

HOT BOX ACTUATED AND DETECTING BRAKE AIR LINE VENT

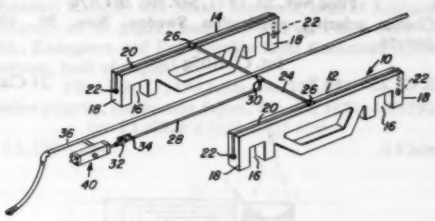
Kenneth W. Winters, Morgantown, W. Va., assignor to Maurice J. Flynn, Henry L. Max & Charles F. Albright, Flynn, Max and Albright, all of Huntington, W. Va., part interest to each

Filed May 17, 1971, Ser. No. 144,178

Int. Cl. B61k *9/04*

U.S. Cl. 246—169 A **8 Claims**

A fusible plug closed vent line for the "Westinghouse Brake System" of a railway car and having a pressure differential actuated control valve operatively associated therewith and responsive to a reduction in air pressure downstream from the control valve to shift the latter from a closed position to an open position for free venting of the associated "Westinghouse Brake System" upon a reduction of air pressure in the vent line downstream from the control valve as would occur when one or more of the fusible plugs closing the vent



line downstream from the control valve are melted. The control valve includes an exteriorly disposed actuator that may not only be operated to close the control valve, but also indicates, in a visual manner, when the control valve has been shifted to the open position.

3,755,670

RAILROAD FROG ASSEMBLY

Sergio Rene Damy, Apartado Postal S-56, Guadalajara, Mexico

Filed Dec. 15, 1971, Ser. No. 208,314

Int. Cl. E01b *7/12*

U.S. Cl. 246—468 **2 Claims**

A bolted, rigid railroad frog assembly in which the wing rails are made in separate toe and heel portions. A cast manganese insert is positioned between toe and heel portions of the wing rails. The long point and short point rails abut the cast manganese insert and are connected to the heel portions of the wing bars. The cast manganese insert has a point filler, a main filler and wing rail extensions and is symmetrical about a longitudinally extending plane so that the insert may be inverted when one side is worn out.

3,755,671

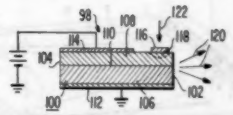
METHOD OF PROVIDING A SEMICONDUCTOR BODY WITH PIEZOELECTRIC PROPERTIES

Harry Francis Lockwood, New York, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,580

Int. Cl. H01j *37/00*

U.S. Cl. 250—49.5 TE **4 Claims**



Semiconductor crystalline materials which lack a center of symmetry but which contain mobile carriers are provided with piezoelectric properties by bombarding the materials with electrons. A body of such semiconductor material can be bombarded with electrons on selected portions thereof so that the unbombarded portions of the body have semiconductor properties and the bombarded portions have piezoelectric properties.

3,755,672

EXPOSURE COMPENSATING DEVICE FOR RADIOGRAPHIC APPARATUS

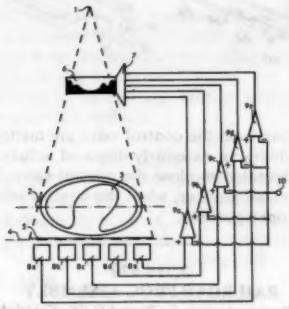
Paul Edholm, Linkoping, and Nils Bertil Jacobson, Solna, both of Sweden, assignors to Medinova AB, Solna, Sweden

Filed Nov. 24, 1971, Ser. No. 201,676

Claims priority, application Sweden, Nov. 30, 1970, 16209/70

Int. Cl. H05g 3/00

U.S. Cl. 250—65 R 31 Claims



A device in radiographic apparatuses for compensating the variations in thickness, density and absorption properties in different parts of an object being radiographed so as to produce a more uniform average exposure of the radiographic recording medium and thereby a more uniform image contrast in all parts of the radiograph of the object. The device comprises a compensating filter device inserted in the radiation path between the radiation source and the object and including radiation absorbing means, which has a variable shape or form such that its absorption values within different portions of the radiation beam can be varied substantially independently of each other. The shape of this radiation absorbing means is varied by automatically operating control means in response to output signals from radiation detecting means disposed on the opposite side of the object so as to sense the average intensity values in different sections of the radiation beam leaving the object to be radiographed.

3,755,673

FILM HOLDER

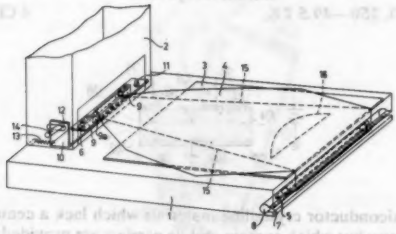
Manfred Bauer, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,874

Claims priority, application Germany, Apr. 14, 1971, G 71 14 217.1

Int. Cl. G03b 41/16

U.S. Cl. 250—68 5 Claims



A film holder, in particular for x-ray films, comprising a holding device for films which is provided on a film holder plate and which comprises a cloth or foil which is subjected to tensile forces and which is stretched over an edge of the film holder plate.

3,755,674

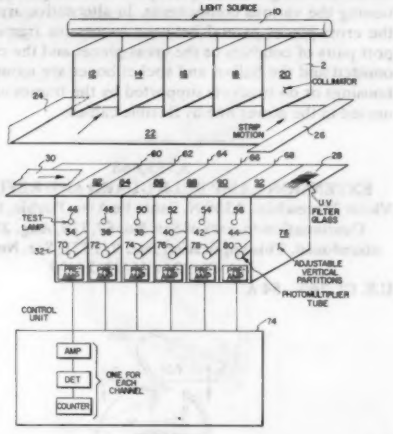
METHOD OF DETECTING PINHOLE DEFECTS IN SHEET MATERIAL

Russell Murray, Laurel, Md., and Dominique Gignoux, Washington, D.C., assignors to Columbia Research Corporation, Gaithersburg, Md.

Filed Mar. 9, 1972, Ser. No. 233,240

Int. Cl. G01n 21/32

U.S. Cl. 250—83.3 UV 8 Claims



Method of detecting pinhole defects in sheet materials for example tin plate, galvanized steel and thin metallic foils. A modulated ultra-violet light source is directed at right angles onto the advancing sheet material, the edges of the sheet material are shielded from both ambient and ultra-violet light, all non-ultra-violet light is shielded out from beneath the advancing strip, ultra-violet light which has been transmitted through the pinhole defects and said filtering is photomultiplied as a function of pinhole defects in the advancing material. The method is distinguished from prior art in collimating the ultra-violet light source so as to transmit the light at a right angle to the direction of motion of the sheet material and independently baffling the photomultiplier units with respect to each other, so as to define precise lineal zones of detection in said advancing material.

3,755,675

NONDESTRUCTIVE ANALYSIS OF FUEL PINS

Ivan E. Stepan, Idaho Falls; Norman F. Allard, Pocatello, and Carl R. Suter, Idaho Falls, all of Idaho, assignors to The United States of America United States Atomic Energy Commission, Washington, D.C.

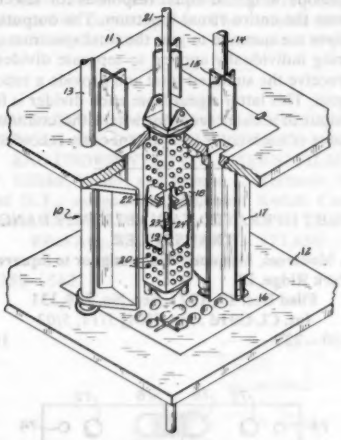
Filed Nov. 3, 1972, Ser. No. 303,552

Int. Cl. G21c 7/00, 17/00

U.S. Cl. 250—83.1 9 Claims

A method and a correspondingly adapted facility for the nondestructive analysis of the concentration of fuel and poison in a nuclear reactor fuel pin. The concentrations of fuel and poison in successive sections along the entire length of the fuel pin are determined by measuring the reactivity of a thermal reactor as each successive small section of the fuel pin is exposed to the neutron flux of the reactor core and comparing the measured reactivity with the reactivities measured for standard fuel pins having various known concentrations. Only a small section of the length of the fuel pin is exposed to the neutron flux at any one time while the remainder of the fuel pin is shielded from the neutron flux. In order to expose only a small section at any one time, a boron-10-lined dry traverse tube is passed through the test region within the core of a low-

power thermal nuclear reactor which has a very high fuel sensitivity. A narrow window in the boron-10 lining is positioned at the core center line. The fuel pins are then systematically



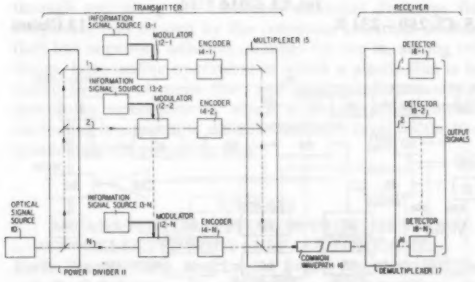
traversed through the tube past the narrow window such that successive small sections along the length of the fuel pin are exposed to the neutron flux which passes through the narrow window.

3,755,676

SPACIALLY MULTIPLEXED OPTICAL BEAM COMMUNICATION SYSTEM

Tracy Stewart Kinsel, Martinsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 24, 1972, Ser. No. 219,959
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **9 Claims**



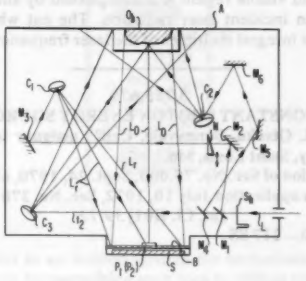
A plurality of optical beams, encoded to have different spacially varying intensity profiles, are launched along a common wavepath. At the receiver, demultiplexing is effected by means of a converging lens which performs a two-dimensional Fourier transformation upon the multiplexed beams, producing an array of spots at the focal plane of the lens which uniquely identifies and separates the plurality of beams. It is an advantage of such a system that the spot locations are not affected by small displacements of the beams off the path axis.

3,755,677

HOLOGRAM PHOTOGRAPHING APPARATUS WITH LIGHT MEASURING DEVICE

Shingo Ooue; Masakazu Hashiue; Masaru Noguchi, all of Asaka-shi, Saitama; Mesane Suzuki, Omiya-shi, Saitama; Motonori Kanaya, and Sakuo Kitahara, both of Asaka-shi, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Fuji Shashin Koki Kabushiki Kaisha, Saitama, both of Japan

Filed Feb. 11, 1972, Ser. No. 225,497
Claims priority, application Japan, Feb. 12, 1971, 46/5592
Int. Cl. G02b *27/00*; **G01j** *1/36*
U.S. Cl. 250—204 **6 Claims**



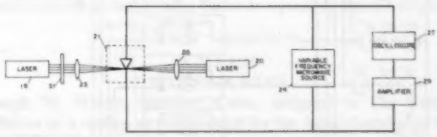
In a hologram photographing apparatus wherein the light from the source is divided into two beams, one of which is projected on the object to be photographed to obtain the object light beam, the other of which is caused to project directly on the photo-sensitive material to obtain the reference light beam, whereby both light are superimposed to record the interference fringe patterns; a photo-receiver is arranged so as to make it possible to measure the intensity ratio between the object light beam and the reference light beam as well as the quantity of exposure; and an incident light selecting member, which causes the object light beam or the reference light beam selectively to impinge onto said photo-receiver, is arranged in the light beam path in which the object light beam and the reference light exist at the same time.

3,755,678

APPARATUS AND PROCESSES FOR DETECTION, GENERATION AND FREQUENCY MEASUREMENTS OF ELECTRO-MAGNETIC RADIATION IN THE INFRARED AND VISIBLE DOMAIN

Ali Javan, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 10, 1970, Ser. No. 62,380
Int. Cl. H01l *15/00*
U.S. Cl. 250—211 J **16 Claims**



A metal to metal point contact diode with an extremely fast response comprising a metal base and an extremely thin metal wire, a cat whisker, with an end point about the order of a thousand angstroms (0.1 micron) or less in diameter at its junction with the diode's base. Detection of low power radiation is accomplished by detecting a voltage across the diode when incident radiation impinges on the cat whisker. Alterna-

tively, the weak signal to be detected is coupled to the diode, together with a strong laser radiation at a frequency in the vicinity of the weak signal to be detected, thereby developing an alternating voltage signal at the difference frequency of the laser and the weak signal. This superheterodyne process is capable of detecting infrared signals below 10^{-15} watts. Frequency measuring is accomplished by hesterodyning an induced current in the whisker with the unknown frequency with a harmonic of a known lower frequency and a known microwave difference frequency to produce a strong beat note. The unknown frequency to be measured can be determined from the known lower frequency and the known microwave difference frequency. Generating radiation in the infrared and visible region is accomplished by subjecting the diode to an incident laser radiation. The cat whisker emits radiation at integral multiples of the laser frequency.

3,755,679

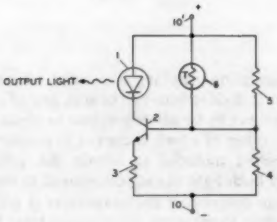
CONSTANT PHOTON ENERGY SOURCE

William M. Otsuka, Sunnyvale, Calif., assignor to Monsanto Company, Saint Louis, Mo.

Continuation of Ser. No. 75,003, Sept. 24, 1970, abandoned. This application July 10, 1972, Ser. No. 270,114

Int. Cl. H01j *39/12*

U.S. Cl. 250—217 SS **7 Claims**



The disclosure herein relates to a solid-satte semiconductor constant photon energy source and circuits therefor, including a temperature-compensating circuit and a light-sensing control element circuit.

3,755,680

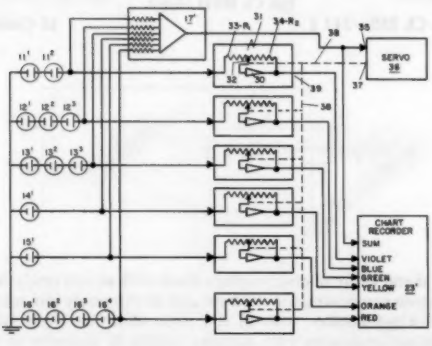
FLAME COLOR SIGNATURE APPARATUS

Chester L. Smith, Lake Hopatcong, and Louis R. Szabo, Landing, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 10, 1971, Ser. No. 179,345

Int. Cl. G01j *3/34*

U.S. Cl. 250—226 **8 Claims**



An instrument for determining the individual proportions of specific colors within the visual spectrum which includes sensing means for each color to provide an electrical analog of the color energy/bandwidth. The sensing means comprises for each spectrum, one or more photocells each coupled with an appropriate transmission filter. These photocell-filter combinations are selected to cover uniform portions of the spectrum to provide weighted equal responses for selected color bands across the entire visual spectrum. The outputs of these combinations are summed to give the total spectrum output as well as being individually applied to separate divider circuits that also receive the summed total and provide a ratio voltage output signal. This latter signal from each divider is fed into a separate input of a chart recorder where the continuous percentage value of each color is simultaneously recorded.

3,755,681

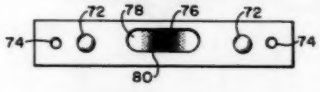
LIGHT OPERATED VARIABLE IMPEDANCE TRANSDUCER

Robert C. Montross, Mequon, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Dec. 17, 1971, Ser. No. 209,331

Int. Cl. G01d *5/34*; H01j *3/14*, *5/02*

U.S. Cl. 250—229 **10 Claims**



A light operated transducer havin a light emitting diode as a light source and a photosensitive transistor as a light responsive element. The light input to the transistor is varied by a member which is movable between the diode and transistor and formed of transparent material to have shaded areas formed according to a predetermined pattern so the intensity of light input to the transistor is varied in response to the movement of the member.

3,755,682

MACHINE POSITION DETECTION AND CONTROL DEVICES

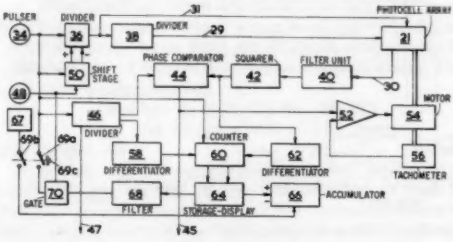
Alexander Russell, Glasgow, Scotland, assignor to National Research Development Corporation, London, England

Filed July 1, 1971, Ser. No. 158,890

Claims priority, application Great Britain, July 1, 1970, 31,794/70

Int. Cl. G01d *5/34*

U.S. Cl. 250—231 R **13 Claims**



In a position indicating or measuring device, diffraction gratings are attached to relatively movable members and light fringes formed by the gratings are directed onto an array of at least eight photoelectric cells, such as an integrated circuit photocell array transducer, the outputs of the photocells being selected in cyclic order by scan pulses to produce a composite output signal having a cyclic waveform the timing of which is compared with a reference signal.

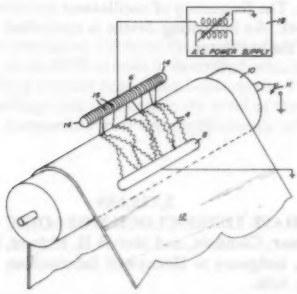
In a position control device, data pulses, e.g. from a punched tape, may then be added to or subtracted from the scan pulses to alter the timing of the composite output signal with respect to the reference signal. The resulting error signal may be applied to a servomechanical system which can move a desired one of the movable members to a required position in accordance with the data pulses. The movable member may follow a predecided contour or move from point to point.

3,755,683

APPARATUS FOR IMPROVING ADHESION OF GELATINOUS AND OTHER COATINGS TO ORIENTED AND UNORIENTED POLYMERIC FILM

Lauri W. Kiikka, Victor, and Ronald L. Hartman, Rochester, both of N.Y., assignors to Eastman Kodak Corporation, Rochester, N.Y.

Filed Aug. 13, 1971, Ser. No. 171,656
Int. Cl. C08f *47/22*
U.S. Cl. 250—542 **6 Claims**



Excellent adhesion of gelatinous and other coatings to oriented and unoriented polymeric film is achieved under both dry and wet conditions. The polymeric film is transported through an elongated coruscate electrical discharge field generated by a high voltage alternating current source on one side of the polymeric film, and which appears similar to an oxidizing flame. The opposite side of the polymeric film is transported in engagement with a conducting surface causing the electrical discharge field to penetrate the film as it moves through and along the coruscate electrical discharge field. Polymeric film treated by the coruscate electrical discharge field has improved adhesive qualities for use in, among other things, heat sealing operations in which a plastic film is heat sealed to the polymeric film, and photographic coating and subcoating operations in which a photographic emulsion, nucleating layer, actinic radiation-sensitive layer, or the like is coated onto the polymeric film.

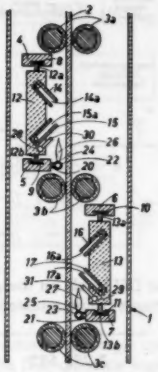
3,755,684

APPARATUS FOR DIFFUSION TREATMENTS OF SELECTED BODY SURFACE PORTIONS

Emile Plumat, Gilly, and Lucien Leger, Montianv le Tilleul, both of Belgium, assignors to Glaverbel S.A., Watermael, Boitsford, Belgium

Division of Ser. No. 722,390, April 18, 1968, Pat. No. 3,645,710. This application Oct. 27, 1971, Ser. No. 192,940
Claims priority, application Great Britain, Feb. 6, 1968, 5,839/68; Australia, Mar. 26, 1968, 35,533/68; Luxembourg, Apr. 25, 1967, 53,513; Aug. 30, 1967, 54,401
Int. Cl. C22d *7/08*; B01k *1/00*
U.S. Cl. 204—323 **9 Claims**

Method and apparatus for the controlled diffusion of ions from a gaseous medium into selected surface portions of a body by contacting such portions with a gaseous diffusion substance at least one element of which represents a source of the ions which are diffused into the material, and maintaining



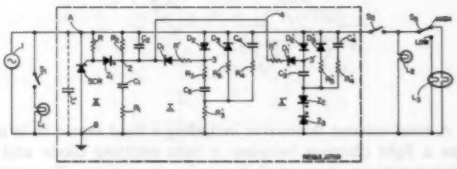
such element in an ionized state in the immediate vicinity of such portions for permitting such ions to diffuse into the body surface.

3,755,685

SIMULATED RMS CONVERTER AND VOLTAGE REGULATOR

Floyd M. Minks, Rt. 1, Box 66, Kissimmee, Fla.

Filed Feb. 9, 1972, Ser. No. 224,714
Int. Cl. B60l *1/00*
U.S. Cl. 307—9 **8 Claims**



This disclosure deals with a simulated approximate root-mean-square control regulator system using a network comprising a rectifying circuit, preferably of the voltage doubler type adjusted and poled to produce a converted output approximately following rms value variations of the voltage source and for controlling the output thereof when such approximate rms voltage value exceeds a predetermined value.

3,755,686

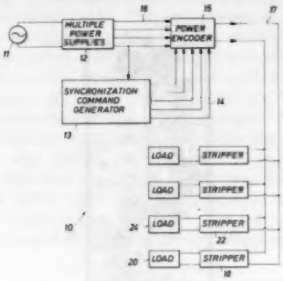
POWERPLEXER

Joseph M. Woods, Boulder, Colo., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 31, 1972, Ser. No. 258,331
Int. Cl. H02j *1/06*
U.S. Cl. 307—18 **15 Claims**

For use in the distribution of DC power levels to loads which require different voltages, a circuit which is supplied with DC voltage levels and commutates pulses for timed intervals onto a pair of distribution wires. The circuit is driven by a command generator which places pulses on the wires in a

timed sequence. The pair of wires extend to voltage strippers connected to the various loads. The voltage strippers each



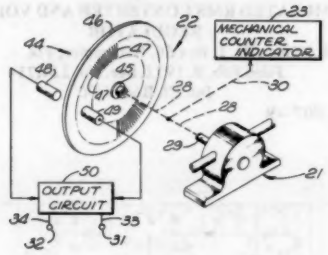
respond to the pulse DC levels on the pair of wires and form different output voltages communicated to each load.

3,755,687

PULSE GENERATOR

Lawrence Taylor Garnett, Fullerton, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,528
Int. Cl. H03k *3/00*
U.S. Cl. 307—117 **6 Claims**



A total volume flowmeter including a fluid motor to in series a light chopper between a light emitting diode and a phototransistor connected in a pulse transmitter. Regenerative feedback is provided from the phototransistor to the light emitting diode. That is, the light output of the light emitting diode is increased as the illumination of the phototransistor is increased, and vice versa. This makes it possible to use high gain amplification because it produces a hysteresis which discriminates against false output pulses which would otherwise occur with the use of high gain amplification because of vibration induced by external means. A source of potential and a resistor may be connected inseries with the pulse transmitter, both the source of potential and the resistor, if desired, being positioned at a remote location. A pulse counter is connected across the resistor to an indicator which, if desired, may be calibrated in total volume flow.

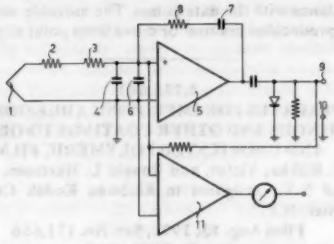
3,755,688

ARRANGEMENT FOR SUPERVISING CIRCUITS

Albert Hohler, Kassel, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,487
Claims priority, application Germany, Dec. 19, 1970, P 20 62 788.7
Int. Cl. G08b *21/00*
U.S. Cl. 307—117 **7 Claims**

Apparatus for monitoring thermocouples comprises a Wien Bridge Oscillator with the thermocouple connected as a part of the bridge. The oscillator parameters are chosen so that oscillations do not occur during normal operation of the thermocouple. The frequency of oscillations are determined by an RC-network. An indicating device is controlled by the output voltage of the oscillator.

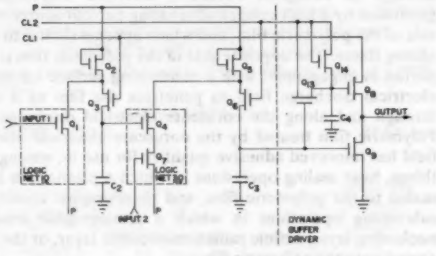


3,755,689

TWO-PHASE THREE-CLOCK MOS LOGIC CIRCUITS

Ben R. Elmer, Glendale, and Melvin H. Eklund, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 30, 1971, Ser. No. 214,048
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **3 Claims**

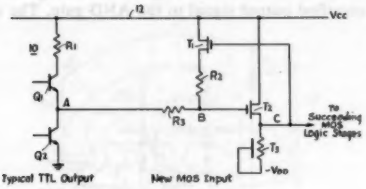


Ratioless MOS logic circuits are disclosed which use two non-overlapping clocks for two-phase control of signal propagation and a third precharge clock, of shorter duration, at double the repetition rate of the first two clocks for precharging storage node capacitance. In each circuit, an electrical network is provided having a transistor connected as a precharge diode for applying the precharge clock to the storage node capacitance through a clocked transfer gate transistor. A logic network is provided having a net of transistors connected, in parallel with the precharge diode transistor, as a relay logic network to selectively discharge the storage node capacitor, after the precharge clock. Where required, a novel dynamic buffer is provided having an output which is essentially insensitive to crossover capacitance effects.

3,755,690
M.O.S. INPUT CIRCUIT WITH T. T. L. COMPATABILITY

Frederick J. Smith, Centereach, N.Y., assignor to Standard Microsystems Corp., Hauppauge, N.Y.

Filed June 6, 1972, Ser. No. 260,328
Int. Cl. H03k 19/08
U.S. Cl. 307—205 4 Claims

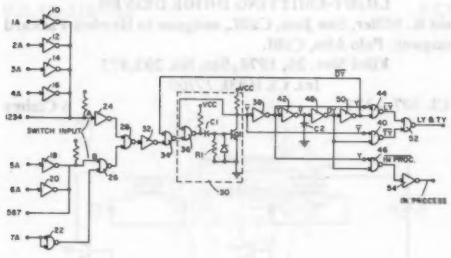


A circuit for interfacing between the output of a TTL circuit and the input of an MOS circuit is described which utilizes a switchable pull-up resistor connected between the TTL circuit output and a voltage line to translate the level of the TTL output to a level compatible with the requirements of the MOS circuit.

3,755,691
KEYBOARD CLOCK WITH TIMING CIRCUITRY FOR CONTROLLING TRANSFER OF DATA BETWEEN KEYBOARD AND PROCESSING APPARATUS

Aurelio V. Cassarino, Newington, Conn., assignor to Magsat Corporation, West Hartford, Conn.

Filed June 9, 1972, Ser. No. 261,508
Int. Cl. H03k 19/08
U.S. Cl. 307—208 8 Claims

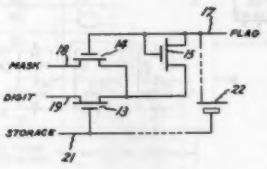


A timing circuit for sensing the operative condition of keyboard actuated switches and for generating, in the proper sequence, control signals for devices employed to temporarily store input data and further control signals for informing processing equipment that data has been entered in the keyboard. The invention also provides for the generation of a "break through" or repeat function.

3,755,692
EXCLUSIVE-OR LOGIC CIRCUIT

Joseph L. Mundy, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 30, 1972, Ser. No. 257,540
Int. Cl. H03k 19/32
U.S. Cl. 307—216 2 Claims

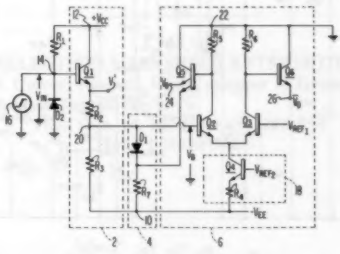


A three transistor exclusive-OR logic circuit is disclosed in which only three of the four possible logic levels of the two input variables are needed.

3,755,693
COUPLING CIRCUIT

James Yat Lee, New Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,177
Int. Cl. H03k 5/08, 19/30, 19/34
U.S. Cl. 307—237 11 Claims



A by-pass circuit, including a diode, is located in a circuit which couples the output signal of a saturated logic circuit to the input circuit to a non-saturated logic circuit, such as an emitter-coupled logic (ECL) circuit. For output signals of lower than a given value, the by-pass circuit does not affect this signal. When the signal increases above said given value, feedback from the non-saturated logic circuit applied to the diode, causes the by-pass circuit to shunt a sufficient portion of this signal to prevent the ECL circuit from saturating.

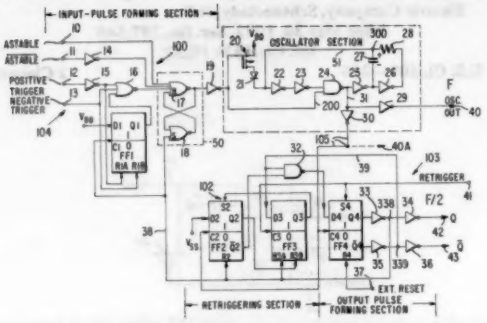
3,755,694
MONOSTABLE/ASTABLE MULTIVIBRATOR

Robert Charles Heuner, Bound Brook, and Joseph Peter Paradise, North Bergen, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,571
Int. Cl. H03k 3/30
U.S. Cl. 307—276 17 Claims

A multivibrator circuit which can be selectively operated in a monostable mode or an astable mode. In the astable mode, either gatable or free-running operation is permitted. In the monostable mode, the multivibrator circuit can be arranged to operate on either the positive-going or the negative-going

edge of a trigger signal. Control logic circuitry renders the duration of the input signal inconsequential in affecting the duration of the output signal. An improved oscillator circuit portion permits faster recovery thereof whereby the multivibrator circuit can operate more rapidly.

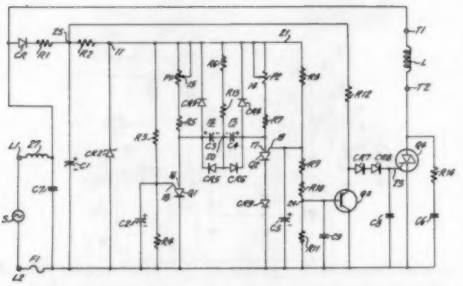


3,755,695

SOLID STATE MOTOR CONTROL CYCLING TIMER

John B. Krick, Joppa, and Bernard Coleman, Westminster, both of Md., assignors to Rowan Controller Inc., Westminster, Md.

Filed Apr. 24, 1972, Ser. No. 246,609
Int. Cl. H03k *17/26*; H01h *47/18*
U.S. Cl. 307—293 **9 Claims**



A solid state timer for providing alternating "on" and "off" time periods for controlling relays, contactors, solenoids and the like and especially adapted for use with industrial control circuits. The "on" and "off" periods may be independently adjusted as to their time intervals. The circuitry is designed so as to automatically begin with the "on" timer period first. The separate adjustable timing circuits are interrelated so as to cause the initiation of an "off" timing period only after the initiation of an "on" timing period and vice versa. A resetting circuit is provided to reset all timing capacitors once line voltage has been removed, as well as assuring the fact that the cycling timer will always start with the "on" time period upon the reapplication of line voltage.

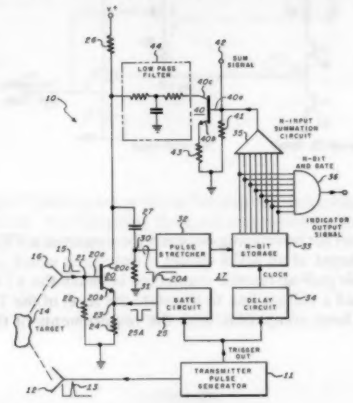
3,755,696

DETECTOR HAVING A CONSTANT FALSE ALARM RATE AND METHOD FOR PROVIDING SAME

Alexander M. Nicolson, Concord, and Robert J. Brophy, Waltham, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,286
Int. Cl. H03k *17/00*
U.S. Cl. 307—296 **25 Claims**

A detector which may be subject to temperature variations and power supply drift comprised of an avalanche transistor circuit having a variable threshold that is sensitive to input signals within a useful frequency band and noise which produces threshold signals when the amplitude of the input signals or the noise exceeds the instantaneous value of the variable threshold. The rate at which the threshold signals are produced is determined in an N bit storage device coupled to the avalanche transistor circuit and clocked at a specific repetition rate. The storage device has each stage coupled in parallel to an AND gate and to a summation network. The AND gate produces an output signal which indicates input signals are present when each stage of the storage device applies a specified output signal to the AND gate. The summation network produces a variable output signal having an amplitude that varies at a rate proportional to the rate at which the threshold signals are produced. The variable amplitude signal is applied to a serial circuit which shunts the collector current of the avalanche transistor circuit at a rate commensurate with the rate the variable amplitude signal varies in response to noise but at a substantially lower rate than the rate the variable amplitude signal varies in response to input signals. The serial circuit thereby controls the threshold sensitivity of the avalanche transistor to provide a constant false alarm rate for the apparatus while also compensating for temperature variations and drift in the voltage level of the power supply.

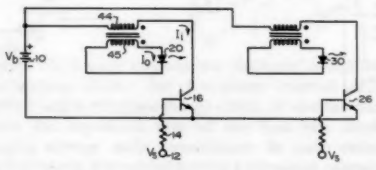


3,755,697

LIGHT-EMITTING DIODE DRIVER

Donald K. Miller, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 26, 1971, Ser. No. 202,475
Int. Cl. H03k *17/00*
U.S. Cl. 307—311 **6 Claims**

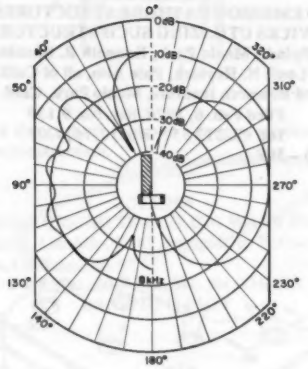


A transistor is driven into conduction by pulses from an external signal source and has an inductance for a collector load. A light-emitting diode (LED) is connected across the inductance and is forward-biased for a short period each time after the transistor ceases conduction. Repetitive pulsing of the LED produces illumination at low-average current consumption.

3,755,698
FREE-FLOODED RING TRANSDUCER WITH SLOW WAVE GUIDE

Winfield J. Trott, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,427
Int. Cl. H04r *17/00*
U.S. Cl. 310—8 2 Claims

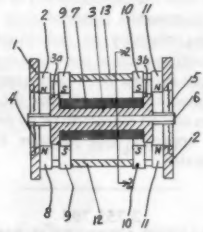


This disclosure is directed to a free-flooded ring type transducer in combination with a coaxial slow waveguide for transmitting or receiving signals which improves the performance by delaying the radiation from the inner surface by one-half wavelength so that the radiation from the inner and outer surfaces are in phase.

3,755,699
ELECTRO-MECHANICAL TRANSDUCER

John Bryan Francis Cartwright, Wolverhampton, England, assignor to Sperry Rand Limited, London, England; part interest

Filed June 12, 1972, Ser. No. 261,790
Claims priority, application Great Britain, June 15, 1971, 28,023/71
Int. Cl. H02k *41/02*
U.S. Cl. 310—12 8 Claims

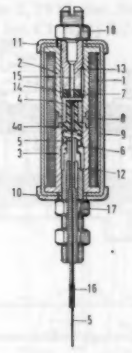


A moving coil transducer comprises a bobbin of magnetically soft ferro-magnetic material having a cylindrical portion wound with an actuating winding between end cheeks, each of the end cheeks being disposed in the gap between a pair of pole pieces comprising parallel plates having apertures shaped to admit the end cheeks and spaced apart at a distance approximately equal to the thickness of the end cheeks.

3,755,700
ELECTROMAGNETIC DRIVE

Hans Buschmann, Bensberg-Refrath; Erwin Mehlhart, Porz-Urbach; Emil Pomplun, Steinenbruck, and Alfred Schwibbe, Cologne, all of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany

Filed Apr. 20, 1972, Ser. No. 245,897
Claims priority, application Germany, Apr. 21, 1971, P 21 19 415.0
Int. Cl. H02k *33/02*
U.S. Cl. 310—30 8 Claims

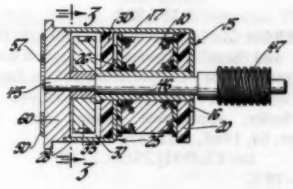


An electromagnetic drive for the needle of a needle printer comprising a pair of cylindrical magnet pole shoes disposed within a cylindrical magnet coil and connected with the needle.

3,755,701
SELECTIVELY REVERSIBLE STEP MOTOR

Mark N. Culver, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 14, 1972, Ser. No. 288,958
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 3 Claims



A selectively reversible step motor. Two field pole pieces, each having a plurality of circumferentially arranged salient field pole tips, are positioned on respective opposite sides of a toroidal field coil with the salient field pole tips being interleaved and extending in the same direction substantially parallel to the axis of and beyond an edge of the field coil to define a cylinder-like recess. A disk type rotor, having a series of premagnetized alternate polarity magnetic rotor poles about the periphery thereof, is mounted for rotation within the cylinder-like recess and an auxiliary direction of rotation selecting pole piece, having a plurality of circumferentially arranged salient pole tips equal in number to the total of salient field pole tips, is mounted for rotation about the axis of the rotor with the salient pole pieces thereof interleaved between adjacent salient field pole tips of the field pole pieces for selectively determining the direction of rotor rotation.

3,755,702

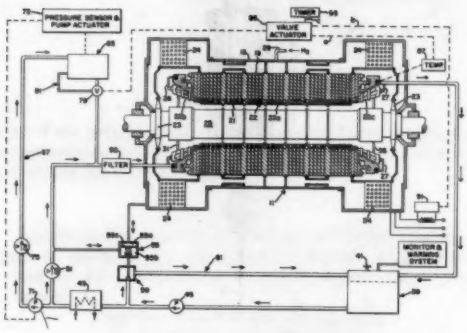
FLOW SURGE EQUIPMENT FOR DYNAMOELECTRIC MACHINE

David M. Willyoung, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 31, 1972, Ser. No. 276,586

Int. Cl. H02k *9/00*

U.S. Cl. 310—53 **16 Claims**



In a dynamoelectric machine with liquid-cooled element there is provided, according to the present invention, means for forcing an increased quantity of liquid coolant through the liquid coolant system during brief periods of dynamoelectric machine transient overload as well as on a regular periodic basis. Two beneficial results are thereby obtained. First, the heat removal capability of the liquid coolant system is transiently increased permitting normal operation at higher levels of initial power density; second, the flow surge of liquid coolant tends to purge the liquid coolant system of foreign particles.

3,755,703

ELECTRON GUN DEVICE FOR COLOR TUBE

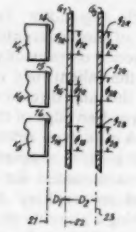
Kiichi Ueno, and Senri Miyaoka, both of Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1969, Ser. No. 815,941

Claims priority, application Japan, Apr. 14, 1968, 43/24589; Apr. 14, 1968, 43/24590

Int. Cl. H01j *29/50, 31/20*

U.S. Cl. 313—70 C **3 Claims**



An electron gun device for color television picture tubes. The electron gun has three cathodes and a plurality of grids. Means are provided for equalizing the cutoff voltages of the cathodes by equalizing the intensity of the electric field reaching the cathodes from the grids. Equalization preferably is obtained by making one or more of the apertures in the first and second grids of a diameter different from that of the other apertures, or by making the distances of one or more of the cathodes from the grids different from the corresponding distances of the other cathodes, or by a combination of both of these arrangements.

3,755,704

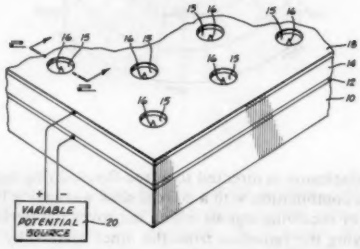
FIELD EMISSION CATHODE STRUCTURES AND DEVICES UTILIZING SUCH STRUCTURES

Charles A. Spindt, Menlo Park; Kenneth R. Shoulders, Woodside, and Louis N. Heynick, Palo Alto, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Feb. 6, 1970, Ser. No. 9,139

Int. Cl. 313 *351*; **H01j** *1/16, 1/02*

U.S. Cl. 313—309 **6 Claims**



Vacuum devices incorporate electron or field forming sources formed by a cellular array of emission sites. The sources comprise a metal/insulator/metal film sandwich on a substrate with a cellular array of holes through the upper metal and insulator, leaving the edges of the upper metal electrode effectively exposed to the upper surface of the lower metal electrode. Sharp protuberances directed toward the upper electrode and constituting emitter tips of controlled configurations are formed on the exposed area of the lower electrode. A method of forming the structure includes starting with the metal/insulator/metal film sandwich having the cellular array of holes already formed and directing permanent electrode material into the cellular array of holes and masking or subsequently removable material onto the surface surrounding the holes whereby an individual sharp cone-like emitter is formed within each of the holes in the cellular array. Vacuum devices are formed from such structures. For example, a diode is formed either by making the masking material over each emission site an electrode or by removing the masking material and applying a conductive electrode material over each emission site.

3,755,705

CATHODE HAVING A CAVITY IN THE EMISSIVE ELEMENT

Gooltzen Zwanenburg, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,149

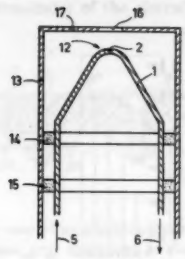
Claims priority, application Netherlands, Feb. 13, 1971, 7101954

Int. Cl. H01j *1/15, 19/08*

U.S. Cl. 313—341 **1 Claim**

A cavity is provided in a wire of a directly-heated cathode so that the temperature at the area of the cavity will be higher

when a current is passed through the wire than on either side of the cavity. As a result, the cavity acts as a limited emissive



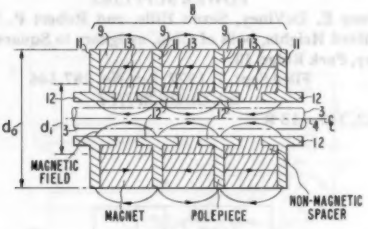
surface and the cathode obtains a longer service life and a more stable construction.

3,755,706

MINIATURIZED TRAVELING WAVE TUBE

Allan W. Scott, Los Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 20, 1972, Ser. No. 236,299
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **7 Claims**



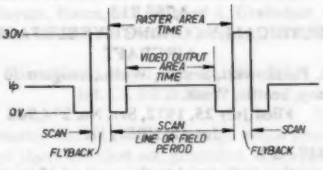
A microwave beam tube operating above 4GHz is miniaturized by designing the electron gun to produce an electron beam having a microperveance within the range of 0.8 to 2.2. A periodic permanent magnet beam focusing structure is provided which employs ring-shaped permanent magnets having a coercive force in excess of 2,000 gauss, whereby the length, size, and weight of the tube, for a given gain and output power, are reduced substantially.

3,755,707

TELEVISION CAMERAS

Andrew de Mouilpied Fremont, Great Baddow, England, assignor to The Marconi Company Limited, London, England

Filed Oct. 14, 1970, Ser. No. 80,711
Claims priority, application Great Britain, Nov. 7, 1969, 54,560/69
Int. Cl. H01j *31/34*
U.S. Cl. 315—22 **9 Claims**



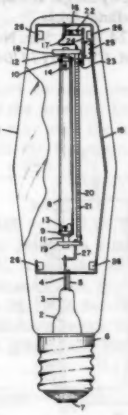
A television camera having at least one camera tube of the Vidicon type in which an electron switch increases the potential applied to the electron gun cathode at and near the beginning and end of field and line deflection in the tube, so that the problem of edge brightening is reduced. The electrom switch increases the applied potentials upon receipt of signals from the normally provided field and line deflecton circuits of the tube.

3,755,708

SODIUM VAPOR LAMPS HAVING IMPROVED STARTING MEANS

Emery G. Audesse, Salem, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 2, 1972, Ser. No. 259,085
Int. Cl. H01j *7/24*
U.S. Cl. 315—47 **6 Claims**



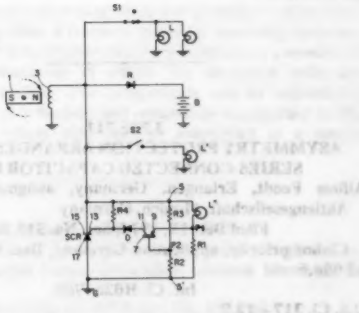
The arc tube of a sodium vapor arc discharge lamp has an external electrical heater spaced from but in heat transfer relationship therewith. The heater is made of tungsten wire and is coiled around an insulating supporting rod.

3,755,709

VEHICULAR LIGHTING SYSTEM REGULATOR AND THE LIKE

Floyd M. Minks, Rt. No. 1, Box 66, Kissimmee, Fla.

Filed Sept. 27, 1971, Ser. No. 184,080
Int. Cl. B60q *1/02*; H02h *3/42*
U.S. Cl. 315—82 **10 Claims**



This disclosure relates to the regulation of vehicular lighting systems involving permanent magnet alternators and the like for energizing the lighting system and which are subject to variations in frequency, voltage amplitude and/or waveform of

the current that is produced from the alternator. In accordance with the disclosure, novel circuit connections are employed including the grounding of a regulator SCR switching rectifier anode used with a bridge circuit comprising an incandescent lamp or similar power sensing element, to safe-guard against the short-circuiting of components and, in addition, to provide compatible operation with those systems that require battery charging from the alternator, though the system of the invention is also applicable with self-starting apparatus.

3,755,710

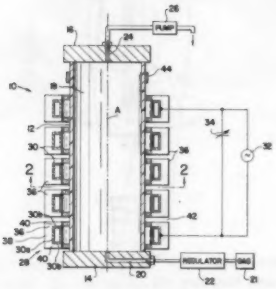
GAS PLASMA DEVICE

Harry B. Osborn, Jr., Cuyahoga, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Mar. 24, 1972, Ser. No. 237,961

Int. Cl. H01j *11/04*

U.S. Cl. 315—348 **15 Claims**



A method and device is disclosed for ionizing gas at the plasma level thereof and comprises a gas chamber having an inlet for gas to be ionized and which inlet is connected to a source of gas so that the chamber can be filled and the gas maintained therein under a vacuum. An induction heating coil surrounds the chamber and the opposite ends of the coil are connected to a source of alternating current for energizing the coil to establish a magnetic field through the chamber. Flux concentrating laminations in the form of C-shaped plates of magnetic material surround the outer and axially opposite sides of the convolutions of the coil to increase the density of the flux field through the chamber to enhance maintenance of gas ionization.

3,755,711

ASYMMETRY PROTECTION ARRANGEMENT FOR SERIES-CONNECTED CAPACITOR UNITS

Alfons Fendt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

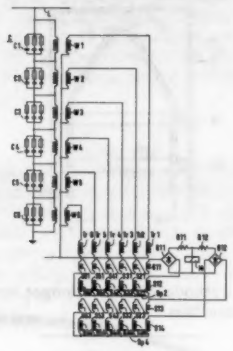
Filed Dec. 18, 1972, Ser. No. 315,866

Claims priority, application Germany, Dec. 18, 1971, P 21 63 004.6

Int. Cl. H02h *7/06*

U.S. Cl. 317—12 B **8 Claims**

Capacitors operable at high voltages consist of series-connected capacitor units, each of which is in turn composed of capacitors which are connected parallel to each other and can be individually disconnected by fuses. An asymmetry protection arrangement is disclosed for monitoring these units for voltage asymmetries. The arrangement compares the sum of the voltage drops present at the individual capacitor units with the voltage drop of the individual capacitor units to provide a



signal in response to a fault condition. The signal thus obtained is usable for initiating a turn-off operation or for indicating a fault condition.

3,755,712

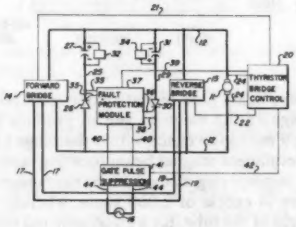
FAULT PROTECTION FOR DC MOTOR THYRISTOR POWER SUPPLIES

Terrence E. DeViney, Seven Hills, and Robert P. Brennan, Bedford Heights, both of Ohio, assignors to Square D Company, Park Ridge, Ill.

Filed Sept. 7, 1972, Ser. No. 287,146

Int. Cl. H02h *7/14*

U.S. Cl. 317—13 R **7 Claims**



In a regenerative DC motor control, a line voltage failure during regeneration ordinarily results in a fault current of sufficient magnitude to damage any conducting thyristors or their protective fuses. To prevent such damage, a gate suppression circuit operates upon occurrence of a fault to prevent further firing of thyristors. A fault protection module controls the connection of a charged capacitor across the then-conducting thyristors at a predetermined time after the fault to permit resetting of those thyristors and prevent any damage to thyristors or fuses.

3,755,713

ELECTRICALLY CONDUCTIVE SURFACE FOR AIRCRAFT

Joseph B. Paszkowski, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

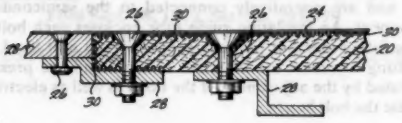
Filed July 25, 1972, Ser. No. 274,948

Int. Cl. H05f *1/02*

U.S. Cl. 317—2 E **3 Claims**

The invention is directed to the method of controlling electrostatic charge on aircraft and vulnerability to lightning strikes and relates to the use of a knitted wire mesh material

applied over a glass fiber composite panel or plastic aerodynamic surface of an aircraft to form a permanent integral part of the surface and wherein the mesh is of the same material as the remainder of the aircraft in order to prevent



corrosion. In the case of an aluminum aircraft, the mesh is also made of aluminum and therefore is electrochemically compatible and eliminates the problems generally associated with the use of electrochemically dissimilar materials.

3,755,714

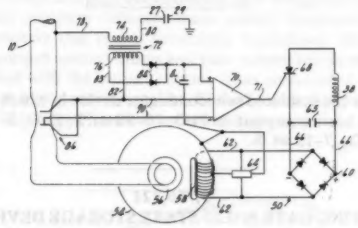
SELF-CONTAINED INTERRUPTING APPARATUS FOR AN ELECTRIC POWER DISTRIBUTION SYSTEM

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Continuation-in-part of Ser. No. 23,734, March 30, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 209,852

Int. Cl. H02h *3/38*

U.S. Cl. 317—29 R **9 Claims**



A self-contained circuit interrupter for an underground electric power distribution system, said interrupters being connected in series in the distribution line and including a shielded hermetically sealed housing, a pair of current interrupting contacts within the housing, an overcenter linkage system for biasing said contacts to a closed position, a solenoid actuated latch holding the linkage system in a position to close the contacts, a power circuit within the housing for tripping the solenoid for the latch and a sensor within the housing to activate the power circuit, the sensor being connected to respond to current and voltage in the cable and having a voltage to current inverse time current characteristic whereby the time required to activate the power circuit increases as the voltage increases for a given current in the cable, the housing having a non arc supporting atmosphere.

3,755,715

LINE PROTECTOR HAVING ARRESTER AND FAIL-SAFE CIRCUIT BYPASSING THE ARRESTER

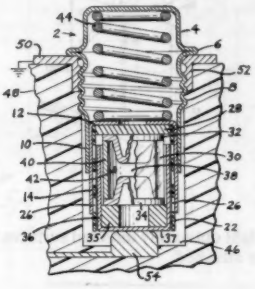
Milton A. Klayum, Itasca, and Richard A. Greischar, Addison, Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

Filed Oct. 11, 1972, Ser. No. 296,578

Int. Cl. H02h *9/06*

U.S. Cl. 317—62 **12 Claims**

A line protector has an arrester through which overvoltages on the line of short duration are grounded. The arrester may be of the type having an arc gap sealed within a gas tube. For an overvoltage of longer duration, a pellet is melted causing a spring to close a circuit bypassing the gas tube and provide a direct metallic path from the line to ground. A secondary arc gap between opposed conductors separated by an insulating sleeve has an arc-over voltage that is greater than the normal arc-over voltage of the first-mentioned arc gap and provides a



path to ground for short duration overvoltage conditions in the event of failure of the arrester. Excessive current across the secondary arc gap may melt the insulator sleeve and engage the opposed conductors for grounding purposes.

3,755,716

EQUIPMENT FRAME FOR ELECTRICAL ELEMENTS

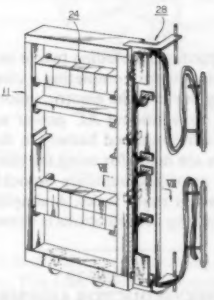
Toshio Yoshii, Tokyo; Jimpachi Yonezaki, Yokohama, and Yoshihiro Takahashi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

Filed June 28, 1972, Ser. No. 267,067

Claims priority, application Japan, June 29, 1971, 46/46785

Int. Cl. H05k *5/02*; **H02b** *1/04*

U.S. Cl. 317—99 **1 Claim**



A panel system comprising three components or other electrical switching units, a frame or panel for mounting said electrical units, and a connector panel unit containing a number of interlinked connectors to which the electrical units are releasably connected. The components can be individually pre-fabricated at a factory and separately transported to the installing site where they can be assembled in a simple manner.

3,755,717

WIRING ARRANGEMENT

Jeffery Isaac Shaw, Cook Hill, near Alcester, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 12, 1972, Ser. No. 252,742

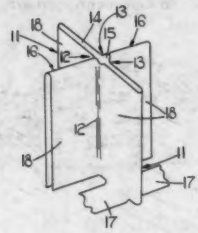
Claims priority, application Great Britain, May 14, 1971, 15,032/71

Int. Cl. H05k *1/04*

U.S. Cl. 317—101 F **12 Claims**

A flexible electric wiring arrangement has an insulating

sheet carrying a conductor pattern. The sheet is slotted and folded so as to be cruciform in plan and so that one side of the



sheet defines eight outwardly directed surfaces to which components can be attached.

3,755,718

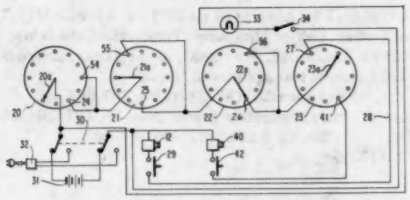
COMBINATION ELECTRIC LOCK

Newton H. Nicholson, 1122 Lewis Dr., Daytona Beach, Fla.

Filed Sept. 9, 1971, Ser. No. 179,028

Int. Cl. E05b *49/00*

U.S. Cl. 317—134 **3 Claims**



Electric lock apparatus including two or more multiple position electrical switches for completing a circuit to actuate an electric unlocking device. The electric unlocking apparatus is operable from a conventional AC power source and also is operable from a self-contained battery in the event of power failure. Provisions are made for using the same basic switching arrangement for providing separate unlocking combinations for controlling two or more locks. A simplified provision for changing the unlocking combinations is shown.

3,755,719

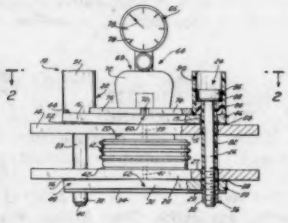
SEMICONDUCTOR ASSEMBLY

Lance C. Wilcox, Wilton, Conn., assignor to Electric Regulator Corporation, Norwalk, Conn.

Division of Ser. No. 887,542, Dec. 23, 1969, Pat. No. 3,661,013. This application Aug. 26, 1971, Ser. No. 175,317

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



A semiconductor assembly comprises a semiconductor component, a body operatively connected to the semiconductor component, a force generating means operatively connected to the body and effective to force the body and the semiconductor into engagement, and means operatively connected to the force generating means and effective to vary its position. The change in position of the end sections is controlled by bolts which pass through the end sections and the body and are operatively connected to the semiconductor component. An insulating guide tube encloses each bolt and an insulating member partially supports each bolt head. The insulating members are effective to withstand the pressures generated by the adjustment of the bolts as well as electrically insulate the bolt heads.

3,755,720

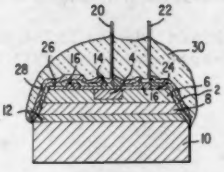
GLASS ENCAPSULATED SEMICONDUCTOR DEVICE

Werner Kern, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,091

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **7 Claims**



Glass encapsulated semiconductor device in which the glass has the basic composition PbO, 70–80 wt.%; ZnO, 5–15 wt.%; and B_2O_3, 7–15 wt.%.

3,755,721

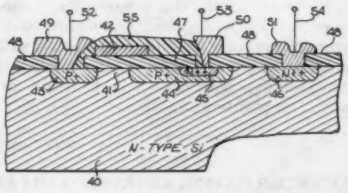
FLOATING GATE SOLID STATE STORAGE DEVICE AND METHOD FOR CHARGING AND DISCHARGING SAME

Dov Frohman-Bentchkowsky, Los Altos, Calif., assignor to Intel Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 46,148, June 15, 1970, Pat. No. 3,660,819. This application Jan. 15, 1971, Ser. No. 106,642

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 R **9 Claims**



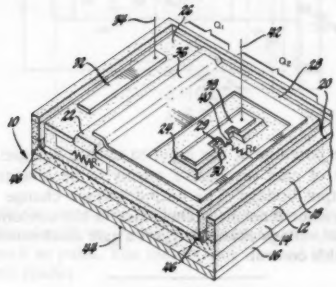
A floating gate solid state storage device comprising a floating silicon or metal gate in a field effect device which is particularly useful in integrated circuit devices such as a read-only memory is disclosed. The gate which is surrounded by an insulative material such as SiO_2 is charged by transferring charged particles (i.e., electrons) at relatively low voltages (e.g., less than approximately 50 volts) across a thick insulation layer (e.g., greater than approximately 500 angstroms) from the substrate during an avalanche injection condition.

3,755,722

RESISTOR ISOLATION FOR DOUBLE MESA TRANSISTORS

Glen E. Harland, Jr., and Robert W. Metzger, Jr., both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 28, 1972, Ser. No. 292,979
Int. Cl. H011 *19/00*
U.S. Cl. 317—235 R 4 Claims



A high voltage and high current mesa type integrated circuit of cascaded common collector mesa emitter transistors and bleeder resistors that resists secondary breakdown. Discrete input and output emitter mesas and base enhancement regions are provided with the output emitter mesa surrounded by an output base enhancement region. Both mesas are separately shorted to the output base enhancement region.

3,755,723

NOVEL GLASSES, SILVER COMPOSITIONS AND CAPACITORS THEREFROM

Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 707,942, Feb. 26, 1968, abandoned.
Filed Sept. 22, 1970, Ser. No. 74,465
Int. Cl. H01g *1/00;* H01b *1/02;* C03c *5/02*
U.S. Cl. 317—258 6 Claims

The glass comprises critical proportionate amounts of PbO, Bi_2O_3 and B_2O_3. Silver compositions, adapted to be applied to and fired on a reduced titanate ceramic substrate to form thereon electrically conductive, adherent fired on films, comprise 1–10 percent of the novel glass and 90–99 percent finely divided silver dispersed in an inert vehicle. Reduced titanate capacitors are prepared from the silver compositions.

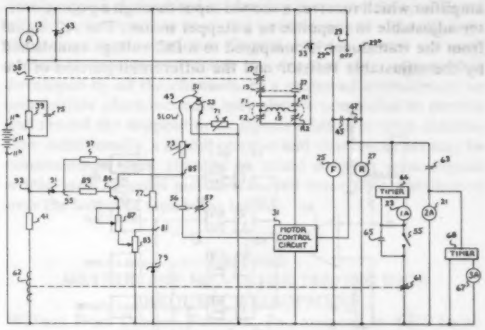
3,755,724

CONTROL FOR SERIES SHUNT MOTOR

Albert W. Anderson, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Apr. 3, 1972, Ser. No. 240,707
Int. Cl. H02p *7/12*
U.S. Cl. 318—139 22 Claims

A control circuit for a direct current electric motor selectively operable as a series motor and as a shunt motor. The circuit includes means to switch connections of the motor armature and of the motor field to adapt such connections to assure the proper armature commutation under predetermined load conditions. Field current is varied, in the shunt mode, by comparing a voltage drop proportional to armature current against the voltage drop across a resistor.

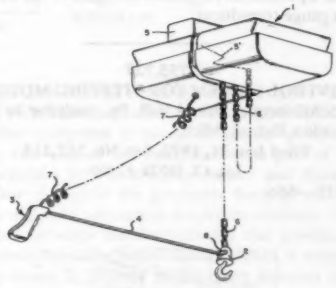


3,755,725

VARIABLE SPEED LOAD BALANCER

Harry B. Cordes, York, Pa., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,116
Int. Cl. H02p *1/22*
U.S. Cl. 318—257 28 Claims



A variable speed load balancer for moving loads from one location to another. The load balancer includes an overhead hoist from which the load is suspended, a control disposed remotely from the hoist for operating the hoist to raise and lower the load at varying speeds, and guide structure for connecting the control to the load for controlling lateral movement thereof during lifting and lowering.

The control for the balancer includes switch means for actuating the hoist, compressive electrical resistance elements for varying its speed, movable members for actuating the switch means and resistance elements and means for precluding actuation of the resistance elements until after actuation of the switch means.

3,755,726

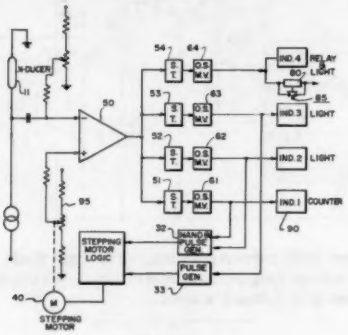
CLOSED LOOP MOTOR CONTROLLED CONDITION RESPONSIVE SYSTEM

Leonard E. Knipe, Longview, and Carl D. Furra, Houston, both of Tex., assignors to Continental Can Company, Inc., New York, N.Y.

Filed May 20, 1971, Ser. No. 145,231
Int. Cl. G05b *9/02*
U.S. Cl. 318—563 18 Claims

A condition responsive detection system having a feedback servo control to adjust the system response to compensate for

normal operational variations in the monitored condition. The detection system includes a strain gauge transducer providing an analog output signal coupled as one input to a differential amplifier which receives a second input through a potentiometer adjustable in response to a stepper motor. The AC signal from the transducer is compared to a DC voltage established by the adjustable resistor and the differential portion of the



signal is amplified and coupled to a network of Schmitt triggers, each firing One-Shot or Monostable multivibrators when the threshold level has been reached. The output from the Schmitt trigger actuated multivibrators is coupled to suitable indicators and the stepper motor to adjust the variable resistor for changing the established DC voltage level to compensate for normal operational variations included in the output from the strain gauge transducer.

3,755,727

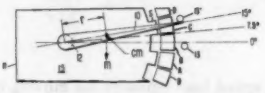
CONTROL SYSTEM FOR STEPPING MOTORS

Italo H. Schifalacqua, Drexel Hill, Pa., assignor to Burrough Corporation, Detroit, Mich.

Filed Jan. 31, 1972, Ser. No. 222,215

Int. Cl. H02k *37/00*

U.S. Cl. 318—696 **16 Claims**



A control system for use with stepping motors is provided which eliminates the oscillations occurring at the end of each discrete step of motor operation. In applications where the travel limits are restrained by physical stops, the present system avoids the impact and the resultant noise which would normally occur at such limits, and insures a longer life for the associated components. The control system accomplishes these objectives by permitting acceleration for an initial increment of travel in any given step, deceleration in the final increment of travel, and holding torque in the limit positions.

3,755,728

PULSED CHARGED ELECTROCHEMICAL TIMING CELLS AND METHOD OF OPERATING

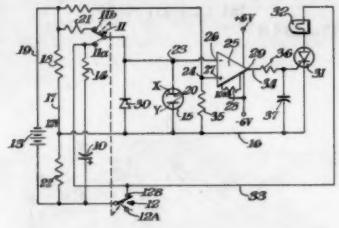
Robert W. Herzig, North Adams; Warren J. Clement, Williamstown, and Juris Zauls, Berkshire, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 22, 1972, Ser. No. 236,843

Int. Cl. H02j *7/00*

U.S. Cl. 320—9 **2 Claims**

A coulometer which is charged by a pulse charging method in an R-C network in series with the coulometer measures time by the passage of a known constant current through the cell so that when the current-time product has caused the transfer of a predetermined amount of active material in the coulometer an impedance transformation within the coulometer results in a voltage rise across the coulometer. The voltage rise applied across the input to a responsive means



changes the potential at the input to change a negative output voltage of said responsive means to be changed to a positive output voltage. The output voltage change is substantially greater than the voltage rise in the coulometer.

The output voltage change triggers a gate mechanism to actuate a suitable control.

3,755,729

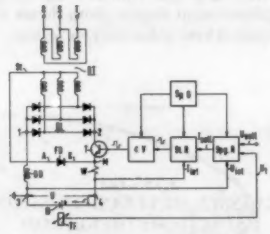
CIRCUIT FOR THE CHARGING OF BATTERIES

Werner Kuttner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 25, 1972, Ser. No. 291,932

Int. Cl. H02j *7/10*

U.S. Cl. 320—20 **15 Claims**



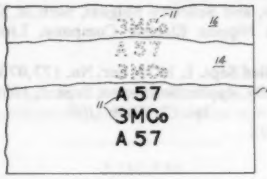
This invention is concerned with a circuit for charging batteries, particularly aircraft batteries, having a rectifier connected on the input side of the battery to a single- or three-phase system. The circuit uses a controlled semiconductor element or switch connected into the charging circuit of the battery and in which the control electrode of the semiconductor is connected to the output of a current control device having an on-off characteristic. A first input of the current control device is set at a predetermined threshold value of the charging current while the actual value of the charging current is connected as a second input to the device. As a result, the current control device transmits a switching signal to the control electrode of the semiconductor switch only when the actual value of the charging current is smaller than the predetermined threshold value. Thus an average charging current is self-regulated within the charging circuit.

Connected to the first input of the current control device is the output of the voltage control device also having an on-off characteristic. The first input of the voltage control device is set at a predetermined threshold voltage, adjusted to the gassing voltage of the battery, and connected to the second input of the voltage control device is the actual battery voltage, Thus, the voltage control device delivers to the current control device the desired predetermined set value for the charging current only if the actual value of the battery voltage is lower than the predetermined set value of the battery voltage.

3,755,730
STEEL OBJECT HAVING HIDDEN MAGNETICALLY READABLE IDENTIFICATION AND THE METHOD FOR APPLYING THE IDENTIFICATION

Peter J. Vogelgesang, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 26, 1971, Ser. No. 165,892
Int. Cl. G01r 33/00
U.S. Cl. 324—34 R 7 Claims

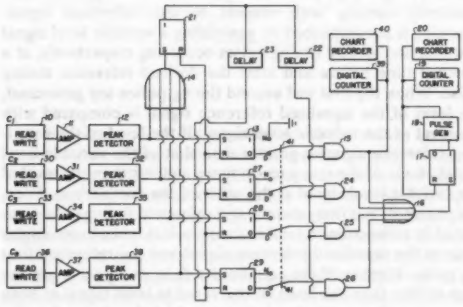


A vehicle, appliance or tool having a multiplicity of magnetizable identifying indicia hidden by an opaque, protective layer such as paint. The indicia may be read by the use of a magnetic reader.

3,755,731
SYSTEM FOR DETECTING DROPOUT AND NOISE CHARACTERISTICS OF MAGNETIC TAPE WITH SWITCH MEANS TO SELECT WHICH CHARACTERISTICS TO BE DETECTED

Frank Young, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1972, Ser. No. 216,673
Int. Cl. G01r 33/12
U.S. Cl. 324—34 TA 4 Claims

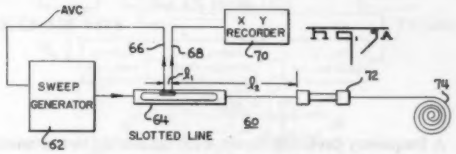


Data bits represented by magnetic flux reversals at substantially each one-half cycle of uniform data periods are recorded on each of a plurality of data channels of the magnetic tape which is to be tested for dropout and noise characteristics. The recorded data bits on each of the plurality of data channels are then detected by a suitable means such as a read-write head. The detected data bits for each channel are connected as the input to a bistable means which in turn provides one of the inputs to an associated sampling gate employed for the purpose of detecting each dropout of a data bit for each channel. All channels are connected in common to an appropriate means for generating a timing signal in response to the first received output signal from the detected data bits. The timing signal is used to develop a first delay of less than one-half of the data period of the originally recorded data and applied to the sampling gates as their second input, actuating each noninhibited sampling gate to produce a dropout error signal. The timing signal also is used to develop a second delayed signal which is connected to reset the bistable means after the sampling has been completed. Digital counter means are connected to receive and count the dropout error signals thus developed by all the channels. In a preferred embodiment an appropriate chart recorder may also be connected to receive and record the dropout error signals relative to time distribution. Additionally, a digital counter and chart recorder may be connected in each channel to count dropout error signals within each channel and also record error time distribution over the length of tape being tested.

3,755,732
METHOD AND MEANS FOR TESTING HIGH FREQUENCY EQUIPMENT

William Dean Couper, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 573,552, Aug. 19, 1966, abandoned, and a continuation of Ser. No. 857,601, Sept. 12, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,646
Int. Cl. G01r 27/04
U.S. Cl. 324—58 6 Claims

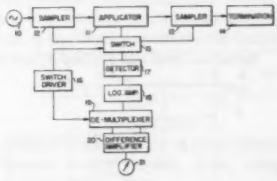


A system and method of measuring the reflection coefficient and VSWR of discontinuities on a high frequency transmission line comprises a sweep frequency generator connected to one end of the transmission, a pair of properly spaced detectors betweeen the generator and discontinuity, the detector closest to the generator feeding back a signal thereto to maintain the output amplitude constant, the transmission line between the discontinuity and generator being free to transmit all direct and reflexted waves. A measuring or recording device is coupled to the other detector for determining the reflection coefficient or VSWR.

3,755,733
MICROWAVE ABSORPTION MOISTURE GAUGE

Allan L. Vankoughnett, and Walter Wyslouzil, both of Ottawa, Ontario, Canada, assignors to Canadian Patent and Development Limited, Ottawa, Ontario, Canada

Filed Mar. 13, 1972, Ser. No. 234,292
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 A 1 Claim



A microwave absorption moisture gauge comprising an applicator containing the sample under test, a source of microwave energy connected via a first sampler to the applica-

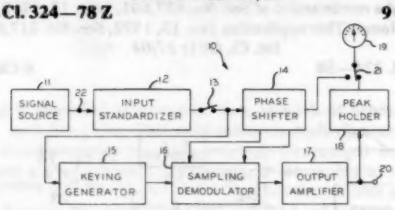
tor, a termination connected via a second sampler to the output of the applicator, a microwave switch connected to both first and second samplers, a detector connected to the switch, a switch driver connected to the switch for alternately connecting first and second samplers to the detector through the switch, a logarithmic amplifier connected to the output of the detector, a de-multiplexer connected to the output of the amplifier and synchronously to the switch driver to provide two outputs, the first of which is the log of a signal related to the microwave power passing through the first sampler and the second is the log of a signal related to the microwave power passing through the second sampler, and a difference amplifier connected to the two said outputs to give an output which is the log of the ratio of the said two signals.

3,755,734

FREQUENCY DEVIATION MONITOR AND MEASURING DEVICE

Carl G. Blanyer, Thousand Oaks, Calif., assignor to Abex Corporation, New York, N.Y.

Filed July 24, 1972, Ser. No. 274,203
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 Z **9 Claims**



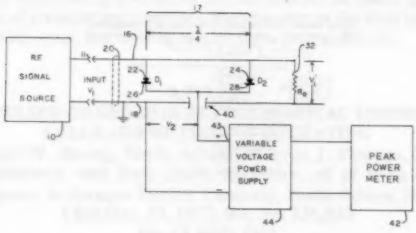
A frequency deviation monitor for measuring instantaneous variations of an input signal from a reference frequency, including an input circuit developing an intermediate signal of constant amplitude, a phase-shifting circuit that shifts the signal in phase by an amount and in a direction representative of deviations of the signal from a given reference frequency, and a key signal generator that develops short-duration key signal pulses at the input signal frequency. The signals from the phase-shifting circuit and the key signal generator are applied to a sampling demodulator that develops an output signal having an amplitude and polarity indicative of the deviation of the input signal from the reference frequency.

3,755,735

TEMPERATURE AND LOAD COMPENSATED R.F. DETECTOR FOR PEAK POWER MEASUREMENT SYSTEM

Alvaro D. Biagi, Huntington Station, and Douglas McGarrett, Centereach, both of N.Y., assignors to Republic Electronics Industries Corp., Huntington Station, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,993
Int. Cl. G01r *21/04, 19/16*
U.S. Cl. 324—95 **6 Claims**



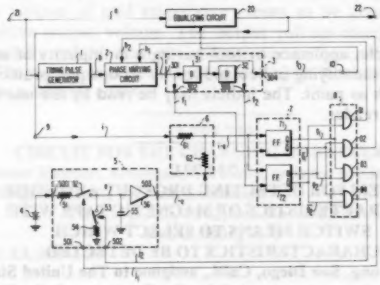
A detector circuit for a radio frequency peak power measurement system includes a shielded transmission line and two identical diodes spaced a quarter wavelength apart and connected across the line. A variable power supply in a slideback arrangement provides a bias to the diodes which are thereby always maintained in a cutoff condition.

3,755,736

PHASE TRACKING SYSTEM FOR AN AUTOMATIC EQUALIZATION

Haruo Kaneko, and Seiichiro Shigaki, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 1, 1971, Ser. No. 177,073
Claims priority, application Japan, Sept. 3, 1970, 45/77663
Int. Cl. H04b *1/00*
U.S. Cl. 325—42 **3 Claims**



Disclosed herein is a phase tracking system adapted for use with an automatic equalization circuit. This system causes a reference timing pulse, derived from a timing component of a received reference signal, to track the peak of the equalized reference signal, the phase of the extracted timing component randomly varying with respect to the reference signal. Tracking is accomplished by generating a variable level signal and first and second timing pulses occurring respectively, at a selected time before and after the derived reference timing pulse. When the first and second timing pulses are generated, the level of the equalized reference signal is compared with the level of the variable level signal. If the level of the equalized reference signal is greater than that of the variable level signal at one of the comparison times and less than the level of the variable level signal at the other of the comparison times, the phases of the first, second and reference timing pulses are varied in a direction to tend to cause coincidence between the peak of the equalized reference signal and the reference timing pulse. Further, if the equalized reference signal is greater than or less than the level of the variable level signal at both comparison times, the level of the variable level signal at the other comparison time. In this manner, the system causes the reference timing pulse to attempt to align itself with the peak of the equalized reference signal.

3,755,737

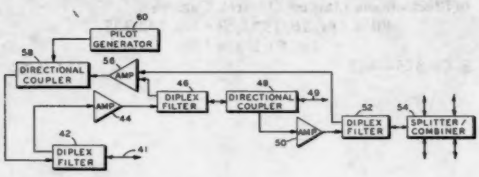
AGC SYSTEM FOR COMMUNICATIONS SYSTEM

Timothy S. Eller, Romulus, N.Y., assignor to GTE Sylvania Incorporated, Senaca Falls, N.Y.

Filed June 26, 1972, Ser. No. 266,437
Int. Cl. H04b *3/10*
U.S. Cl. 325—62 **6 Claims**

An AGC system for a communications system wherein AGC pilot signals originating in separate branches are com-

bined on a single branch is shown. The frequencies of the pilot signals are off-set by a frequency difference sufficient to prevent beat frequencies from deleteriously affecting the gain control of amplifiers responsive to the pilot signals.

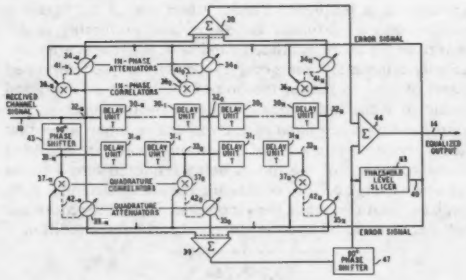


3,755,738

PASSBAND EQUALIZER FOR PHASE-MODULATED DATA SIGNALS

Richard Dennis Gitlin, Monmouth Beach; Edmond Yu-Shang Ho, Englishtown, and James Emery Mazo, Fair Haven, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 1, 1972, Ser. No. 249,219
Int. Cl. H03h *7/36*
U.S. Cl. 325—42 **5 Claims**



An adaptive transversal equalizer for differentially coherent phase-modulated data transmission systems employs a tapped delay line provided with complete sets of in-phase and quadrature weighting attenuators operating on time-spaced samples of passband signals appearing at each tap. Tap signals selectively adjusted by the respective sets of attenuators are combined after a quadrature phase shift of one set to form the equalized output signal. Control signals for adjusting all attenuators are derived from the mean-square error difference between the actual equalizer output and a predetermined threshold level based on an assumed absolute phase reference angle at the equalizer output.

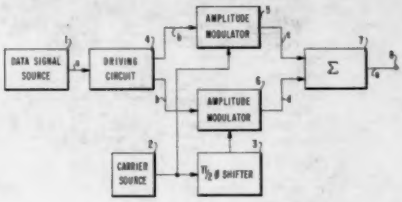
3,755,739

DATA SIGNAL TRANSMISSION SYSTEM EMPLOYING PHASE MODULATION

Yoshimitsu Okano, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 2, 1971, Ser. No. 120,298
Claims priority, application Japan, Sept. 5, 1970, 45/77979
Int. Cl. H04b *1/04*
U.S. Cl. 325—163 **5 Claims**

Data transmission systems utilizing phase modulation wherein wave distortion and intersymbol interference are reduced by requiring carrier signals to undergo gradual phase shifts over a time interval T_0 in response to data signals. In that phase shifting occurs over a time interval T_0 rather than instantaneously, band width reduction is realized with accompanying reduction in wave form distortion and intersymbol interference.

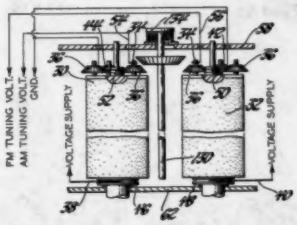


3,755,740

ENGAGEMENT DELAY FOR A PUSH BUTTON CONTROLLED VOLTAGE GENERATOR FOR A DUAL BAND ELECTRONICALLY TUNED RECEIVER

Terrance W. Maugans, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 5, 1972, Ser. No. 250,561
Int. Cl. H04b *1/08*
U.S. Cl. 325—315 **3 Claims**



A ratchet engagement delay for a tuning voltage generator having a first turret for supplying a voltage for tuning a radio receiver in the AM frequency band and a second turret for supplying a voltage for tuning the radio receiver in the FM frequency band. A first ratchet mechanism has a driven member secured to the first turret for rotation therewith and a drive member which is rotated by a first push button actuator. A second ratchet mechanism has a driven member secured to the second turret for rotation therewith and a drive member which is rotated by a second push button actuator. A ratchet engagement mechanism is responsive to the actuation of the first push button actuator to engage the drive and driven members of the first ratchet mechanism after initial rotation of the driven member and responsive to the actuation of the second push button actuator to engage the drive and driven members of the second ratchet mechanism after initial rotation of the drive member to provide a ratchet engagement delay upon the first actuation of the first or second push button actuator after the other of said actuators has been actuated.

3,755,741

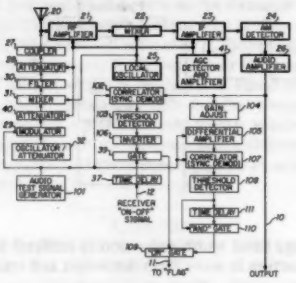
SELF-MONITORING OF RADIO RECEIVERS

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Feb. 11, 1972, Ser. No. 225,399
Int. Cl. H04b *1/00*
U.S. Cl. 325—363 **24 Claims**

Continuous monitoring of a radio receiver without impairing normal receiver operation is provided by an internally

generated carrier signal combined at low level with the received signal. The test carrier is so modulated as to not affect normal receiver detection process, and the test modulation signal component, as present in the output of the receiver detector, is synchronously demodulated and monitored to provide indication of faulty receiver threshold level and signal distortion.

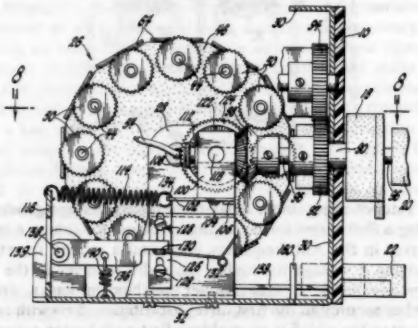


3,755,742

SINGLE TURRET MECHANISM FOR GENERATING TUNING VOLTAGES FOR A VOLTAGE TUNED AM-FM RADIO RECEIVER

Terrance W. Maugans, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1972, Ser. No. 245,839
Int. Cl. H04b 1/16
U.S. Cl. 325—459 **3 Claims**



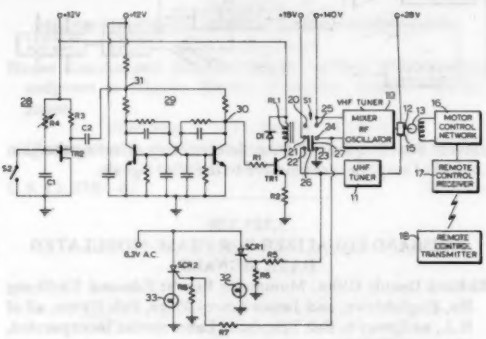
An apparatus for generating tuning voltages for a voltage tuned AM-FM radio receiver including a turret having a plurality of potentiometer assemblies circumferentially spaced therearound, the wiper arms of the potentiometer assemblies being positioned so as to generate voltages for tuning the tuned circuits in the AM and FM sections of the radio receiver. A first manually operable ratchet mechanism rotates the turret so as to position alternate potentiometer assemblies at a tuning station and simultaneously switches the radio receiver for operation in the AM frequency band. A second manually operable ratchet mechanism rotates the turret to sequentially position the remaining potentiometers at the tuning station and simultaneously switches the radio receiver for reception in the FM frequency band. A voltage is picked off the potentiometer at the tuning station and supplied to the receiver to effect tuning thereof. A tuning mechanism is manually actuated and latched into engagement with a drive mechanism for the wiper arm of the potentiometer assembly positioned at the tuning station and is operable to position the wiper arm to generate the desired tuning voltage. An unlatching mechanism is provided for unlatching the tuning mechanism upon operation of either of the first or second ratcheting mechanisms.

3,755,743

SIGNAL RECEIVER WITH A PLURALITY OF TUNERS AND AUTOMATIC SWITCHING SYSTEM FOR CYCLICALLY ENERGIZING THE SAME

Michael W. McLernon, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Ontario, Canada

Filed Apr. 10, 1972, Ser. No. 242,435
Int. Cl. H04b 1/06
U.S. Cl. 325—462 **15 Claims**



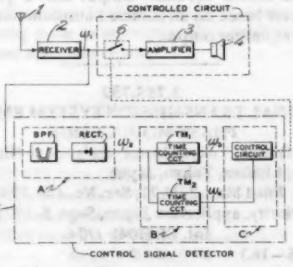
A signal receiver such as a television receiver has first and second tuners such as a VHF tuner and a UHF tuner. The tuners are capable of being simultaneously rendered into a number of different tuned conditions in each of which, when the tuners are energized, they will be tuned to signal within their respective frequency bands. When one of the tuners is rendered into a particular condition that preferably is different from the aforesaid tuned condition, the tuners are automatically alternately energized cyclically for predetermined periods of time to render the one of the tuners so energized capable of translating signals received by the receiver and within the frequency band of the respective tuner when that tuner is rendered into a tuned condition. Means are provided responsive to one of the tuners being rendered into a tuned state while energized for maintaining the energized tuner in its energized condition while the receiver is on until the aforesaid one tuner is rendered into the aforesaid particular condition.

3,755,744

RECEIVING DEVICE FOR AUTOMATICALLY DEMUTING AND REMUTING BY TWO CONTROL SIGNALS SEQUENTIALLY TRANSMITTED FROM TRANSMITTER

Masayuki Fukata, 94 Shimorenjaku, Mitaka-Shi, Tokyo, Japan

Continuation-in-part of Ser. No. 885,401, Dec. 16, 1969, Pat. No. 3,628,153. This application June 25, 1971, Ser. No. 156,895. The portion of the term of this patent subsequent to Dec. 14, 1988, has been disclaimed.
Int. Cl. H04b 1/06
U.S. Cl. 325—466 **4 Claims**



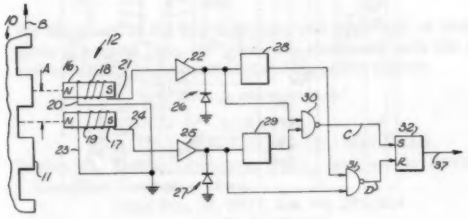
Apparatus to sense a first control signal and a second control signal transmitted after the first signal and having a dura-

tion or repetition rate different than the first signal. A controlled circuit is triggered to and self-held in the switching-in state in response to the first signal and restored in response to the second signal.

3,755,745
NOISE DISCRIMINATION APPARATUS

Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 173,459, Aug. 20, 1971, abandoned. This application June 23, 1972, Ser. No. 265,526
Int. Cl. H03b 3/04
U.S. Cl. 328—133 **20 Claims**

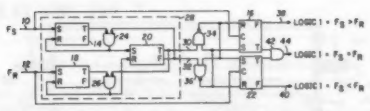


A system for producing information pulses including, for example, two magnetic pick-ups spaced apart *nd*, where *n* is any positive odd integer and *d* is equal to one-half the spacing between two immediately adjacent teeth of a rotatable ferromagnetic armature. A phase comparison logic circuit is connected from the pick-ups. This circuit is selective and discriminates against voltages induced by vibration, by an internal combustion engine ignition system coil or by other means. The system is useful for providing a velocity analog for any purpose including, but not limited to, an anti-skid braking arrangement for automotive vehicles.

3,755,746
FREQUENCY COMPARISON INDICATING APPARATUS

Noel E. Hogue, Cedar Rapids, and Charles M. Dennison, Hiawatha, both of Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Mar. 7, 1972, Ser. No. 232,460
Int. Cl. H03d 13/00
U.S. Cl. 328—133 **3 Claims**

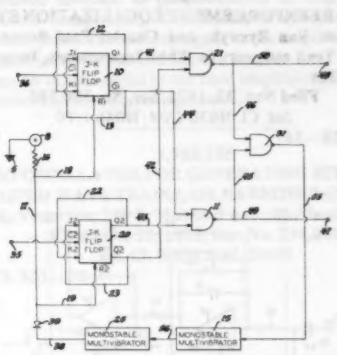


A gating system for use with a frequency discriminator which will provide a positive indication of whether or not two input signals are the same frequency or, if they are not the same frequency, which one is the higher. The apparatus is for use with a frequency detector providing logic "1" and logic "0" outputs indicative of the highest frequency and providing an alternating output when the two frequencies are identical. The output of the frequency discriminator is utilized to steer flip-flops to provide the necessary positive outputs.

3,755,747
CIRCUIT FOR PRODUCING AN OUTPUT SIGNAL PULSE OF A WIDTH EQUAL TO THE PERIOD BETWEEN SEPARATED INPUT SIGNAL PULSE PAIRS

Vincent H. Letosky, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1972, Ser. No. 292,266
Int. Cl. H03d 13/00
U.S. Cl. 328—133 **6 Claims**

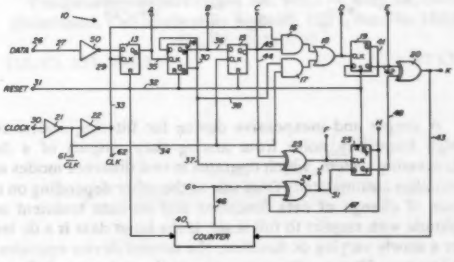


Two J-K flip-flop circuits, initially reset to a first state in which logic 0 and logic 1 output signals are present upon the Q and $\overline{Q}$ output terminals, respectively, are triggered by respective pulses of separated input signal pulse pairs to a second state in which logic 1 and logic 0 output signals are present upon the Q and $\overline{Q}$ output terminals, respectively. First and second NAND gate circuits produce a respective output signal pulse corresponding to each input signal pulse pair of a width equal to the period between the input signal pulse pairs when one of the pulses of each input signal pulse pair is the first occurring or when the other one of the pulses of each input signal pulse pair is the first occurring, respectively, in response to the logic output signals upon the Q output terminal of the first triggered J-K flip-flop circuit and the $\overline{Q}$ output terminal of the other J-K flip-flop circuit until triggered to the second state by the other input signal pulse of the pulse pair.

3,755,748
DIGITAL PHASE SHIFTER/SYNCHRONIZER AND METHOD OF SHIFTING

Earl F. Carlow, Scottsdale, and Edward C. Hepworth, Apache Junction, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 6, 1972, Ser. No. 217,909
Int. Cl. H03b 3/04; H03k 5/18
U.S. Cl. 328—155 **29 Claims**



An electronic synchronizer for synchronizing the output pulse rate of an electronic clock with an input pulse train. The

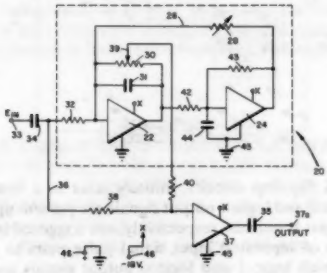
synchronizer provides a sampling signal output at a desired time within the time period of a single pulse of the input pulse train. The synchronizer phase-shifts the sampling signal by one-half of 1 clock cycle to either slow or speed the sample time, when required. A method of synchronizing by phase shifting the sample signal by one-half of 1 clock cycle is also disclosed.

3,755,749

SOUND REENFORCEMENT EQUALIZATION SYSTEM

Carl Wayne Van Ryswyk, and Charles Paul Boner, both of Austin, Tex., assignors to White Instruments, Incorporated, Austin, Tex.

Filed Nov. 22, 1971, Ser. No. 200,785
Int. Cl. H03b 1/04; H04b 1/10
U.S. Cl. 328—167 **9 Claims**



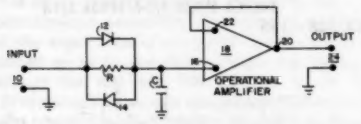
An active filter in combination with a sound reenforcement equalization system is provided. The filter permits variation of the notch frequency over a wide range of frequencies and adjustment of the notch depth from zero to any desired value independent of frequency control. Active filters may be cascaded without additional loss in the pass band.

3,755,750

NOISE SUPPRESSION FILTER

Emory D. Heberling, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1972, Ser. No. 239,544
Int. Cl. H03k 1/10
U.S. Cl. 328—167 **2 Claims**



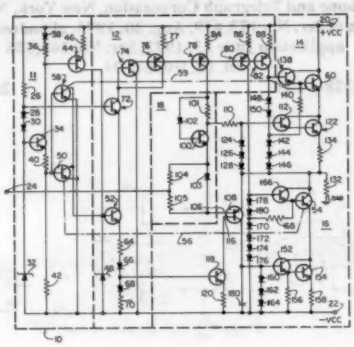
A simple and inexpensive device for filtering undesirable high frequency noise from analog data outputs of a data processing system, which operates in two different modes and switches automatically from one to the other depending on the rate of change of data functions and on data transient amplitude with respect to full scale. If the input data is a dc level or a slowly varying dc function, the subject device operates as a low pass filter to attenuate noise in the output, and if a step or square wave function occurs in the data the filter is automatically removed until the transition is completed and then the device reverts back to the low pass filter mode of operation.

3,755,751

HIGH VOLTAGE SOLID-STATE AMPLIFIER HAVING TEMPERATURE RESPONSIVE SHUTDOWN

Charles Martin Ring, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 21, 1971, Ser. No. 191,398
Int. Cl. H03f 1/32
U.S. Cl. 330—23 **26 Claims**



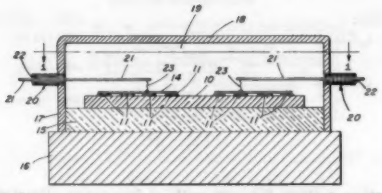
The amplifier circuit includes first and second output stages which respectively amplify positive and negative excursions of an input signal. A bias circuit connected to each stage prevents crossover distortion. A plurality of dependent current sources supplying the bias and amplifier stages are controlled by a master current source. Transistors having temperature responsive threshold voltages are thermally connected to each of the output stages and electrically connected between a constant bias supply and the master current source. If the temperature of either output stage increases above a predetermined value, the thermally associated transistor conducts and renders all of the current sources inoperative. Furthermore, diode strings are utilized to provide low base resistances and other transistors are utilized to provide high emitter resistances for selected transistors thereby enabling them to sustain high voltages.

3,755,752

BACK-TO-BACK SEMICONDUCTOR HIGH FREQUENCY DEVICE

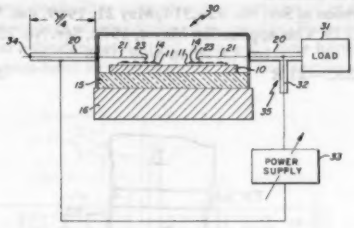
Chung K. Kim, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 26, 1971, Ser. No. 137,373
Int. Cl. H03f 3/10, 3/12
U.S. Cl. 330—34 R **22 Claims**



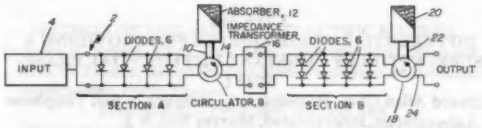
A microwave semiconductor system in which a transistor, tunnel diode, avalanche diode, or transferred electron oscillator (Gunn effect) is formed as a plurality of substantially electrically symmetrical semiconductor devices connected in series and supported on the same heat sink. The active regions

of the devices are formed of uniformly doped semiconductor material. The width of said active regions is less than ten times



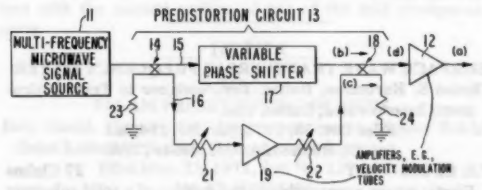
the thickness of the active regions and the length of said regions is greater than ten times said thickness, with the heat sink extending beyond the edges of the active regions.

3,755,753
BROADBAND SOLID STATE AMPLIFIER
Burton H. Smith, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 21, 1971, Ser. No. 210,454
Int. Cl. H03f 3/60
U.S. Cl. 330—53 **6 Claims**



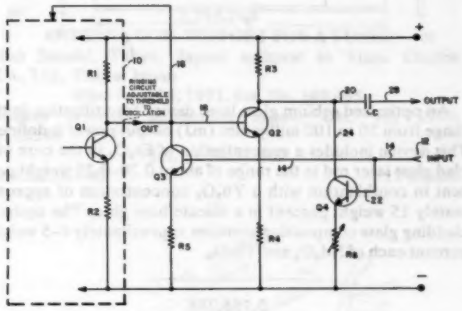
A plurality of solid state devices exhibiting negative resistance characteristics in the nonoscillating state are positioned in parallel at periodic intervals along an electro-magnetic energy transmission line so as to provide a negative propagation constant to effect a high gain broadband amplifier. Sections of devices with the total number increasing within subsequent sections and reverse wave limitation means together with suitable impedance matching means complete the device. Both rectangular and coaxial waveguide transmission line configurations are described.

3,755,754
PREDISTORTION COMPENSATION FOR A MICROWAVE AMPLIFIER
John L. Putz, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Feb. 4, 1972, Ser. No. 223,598
Int. Cl. H03f 1/32
U.S. Cl. 330—149 **10 Claims**


PREDISTORTION CIRCUIT 13
MULTI-FREQUENCY MICROWAVE SIGNAL SOURCE
VARIABLE PHASE SHIFTER
AMPLIFIERS, E. G., VELOCITY MODULATION TUBES

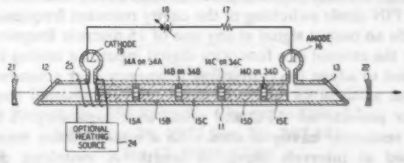
A predistortion circuit for compensating distortion in a final amplifier includes a first directional coupler for separating a portion of the input modulated microwave signal into first and second channels having first and second signal components therein, respectively. The second signal component is fed to a distortion amplifier having a distortion transfer characteristic substantially similar to that of the final amplifier to be corrected. The distorted output of the distortion amplifier is proportioned in amplitude by a variable attenuator and combined in phase opposition with the larger undistorted first microwave signal in a second directional coupler to form a composite predistortion microwave signal having distortion components inverted in phase relative to thephase of the undistorted components. The distortion components in the composite predistorted input signal to the amplifier cancel the distortion components introduced by the final amplifier to produce an output signal in the final amplifier having substantially reduced distortion components.

3,755,755
AUDIO OSCILLATOR FOR GENERATING EITHER C.W., DAMPED WAVE TRAINS, OR NARROW BAND NOISE
John A. Victoreen, 350 S. Maitland Ave., Maitland, Fla.
Filed Mar. 22, 1972, Ser. No. 234,608
Int. Cl. H03b 5/26, 29/00
U.S. Cl. 331—78 **2 Claims**



A ringing circuit of the RC type is provided which is adjusted to the point where it is just short of self excitation. An input signal is applied to the ringing circuit to cause it to oscillate at an amplitude which follows the input signal. Then the output signal from the circuit has the applied signal cancelled to leave only the signal of the ringing circuit.

3,755,756
GASEOUS LASER EMPLOYING A SEGMENTED DISCHARGE TUBE
William Thomas Silfvast, Holmdel Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 145,174, May 20, 1971, abandoned. This application Sept. 30, 1971, Ser. No. 185,048
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **12 Claims**



There are disclosed gaseous or vapor lasers, typically ion lasers, which employ annular elements composed of, or containing in hollow portions thereof, a vaporizable active materi-

al to form segments of the bore of the discharge tube. These elements are sandwiched between glass spacers to define the active gain region of the lasers. In operation, discharge heating vaporizes portions of the material from the elements to provide a uniform distribution and stable control of active vapor in the tube. The lasers eliminate the need for external heating of the active material and for appendages to the tube forming reservoirs for the material. Other desirable features include a short warm-up time, a long tube life, and a simplified and inexpensive construction.

3,755,757

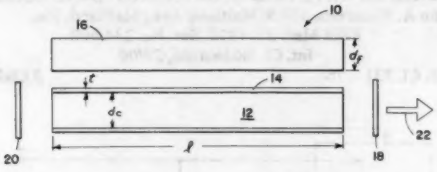
HIGH EFFICIENCY ERBIUM GLASS LASER

Richard F. Woodcock, South Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Conn.

Filed June 23, 1972, Ser. No. 265,839

Int. Cl. H01s *3/16*

U.S. Cl. 331—94.5 **7 Claims**



An optimized erbium glass laser device for utilization in the range from 50 to 100 millijoules (mJ) output power is defined. This device includes a concentration of Er_2O_3 in the core of a clad glass laser rod in the range of about 0.20–0.25 weight percent in combination with a Yb_2O_3 concentration of approximately 15 weight percent in a silicate base glass. The optimal cladding glass composition contains approximately 4–5 weight percent each of Nd_2O_3 and Yb_2O_3.

3,755,758

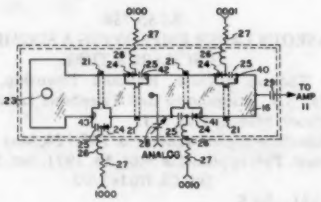
DIGITAL TUNED MICROWAVE OSCILLATOR

David B. Leeson, Los Altos, Calif., assignor to California Microwave, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 868,720, Oct. 23, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,526

Int. Cl. H03b *5/18*

U.S. Cl. 331—101 **6 Claims**



A high stability digitally tuned L-band cavity oscillator employs PIN diode switching of the cavity resonant frequency to provide an output signal at any one of 16 discrete frequencies under the control of a four-wire digital input. An analog input is added to adjust the center-line frequency over a bandwidth at least as wide as the least significant incremental step to further provide for AFC and phase lock capability. A half-wave resonator cavity is used with a quarter-wave member notched at intervals along its length. A switching diode adapted to be coupled to a source of digital signals is coupled across each notch to digitally control the electrical characteristics of the resonator and its output frequency. A varactor provides the analog and fine tuning control.

3,755,759

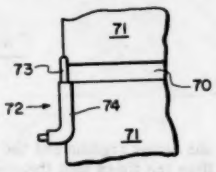
SLOT LINE

Seymour B. Cohn, Los Angeles, Calif., assignor to Stanford Research Institute

Division of Ser. No. 826,314, May 21, 1969, Pat. No. 3,688,225. This application May 4, 1972, Ser. No. 250,453

Int. Cl. H01p *3/08, 5/08*

U.S. Cl. 333—21 R **3 Claims**



This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. With various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

3,755,760

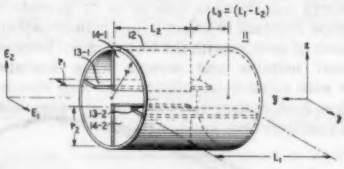
DIFFERENTIAL PHASE-SHIFTER FOR PROVIDING A SUBSTANTIALLY CONSTANT DIFFERENTIAL PHASE-SHIFT

Edward Allen Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 6, 1972, Ser. No. 295,610

Int. Cl. H03h *7/30;* **H01p** *1/18*

U.S. Cl. 333—31 A **6 Claims**



A differential phase-shifter which provides a substantially constant differential phase-shift to two orthogonally polarized waves having the same frequency band by causing one of the waves to see two phase-constant characteristics having rates of change over the band which are greater than and less than, respectively, the rate of change of the phase-constant seen by the other wave.

3,755,761

SURFACE WAVE TRANSVERSAL FREQUENCY FILTER

Clinton S. Hartmann, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

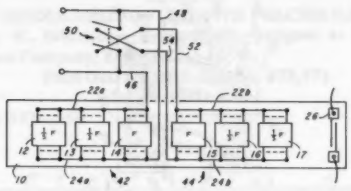
Filed Dec. 30, 1971, Ser. No. 214,362

Int. Cl. H03h *9/26, 9/32;* **H04r** *17/00*

U.S. Cl. 333—70 T **27 Claims**

Elastic waves propagating at the surface of a solid substrate are generated by a transducer-filter of interdigitated electrodes patterned to pass a particular wavelength of frequencies at an established center frequency. Interdigitated electrodes of the filter may be either uniformly spaced one-half wavelength apart or spaced to produce a desired function. The

overlapping length of the electrode configuration for each filter varies in accordance with a weighting function usually approximating sin x/x. To generate an output signal having a desired frequency distribution between band pass and band stop regions, each filter comprises two sections of an array of three or more taps of interdigitated electrodes. These taps correspond to a fundamental, third, fifth, etc., time harmonic of the band pass-band stop periodicity. The two sections are ar-



ranged back to back on the substrate, that is, with the fundamental tap of each section adjacent and the highest time harmonic tap of each section at the ends of the filter. An interchange of the band pass and band stop regions is accomplished by splitting each filter and connecting the individual sections to a reversal switch. By selective programming of a plurality of filters, a particular frequency will be selected and passed through an array of such filters.

3,755,762

METHOD OF BUILDING FOR ELECTRIC FILTERS

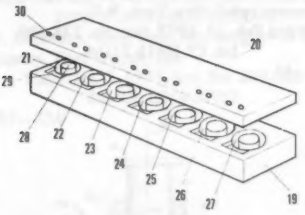
Jacques R. Boulin, Paris, and Alexis Nepomiastchy, Bagneux, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed May 22, 1972, Ser. No. 255,585

Claims priority, application France, Feb. 23, 1972, 7206035

Int. Cl. H03h 7/04; H05k 1/16, 1/18

U.S. Cl. 333—70 S **7 Claims**



A low cost and reduced bulk electric filter construction, in particular for telecommunication equipment, in the form of an assembly of inductances and capacitors, in which all the inductances of the filter use as magnetic cores a common ferrite block consisting of two contiguous parts. The capacitors are preferably grouped in a single insulating wafer placed in contact with the outside surface of one of the said contiguous parts.

3,755,763

FM-AM PRESET TUNING DEVICES

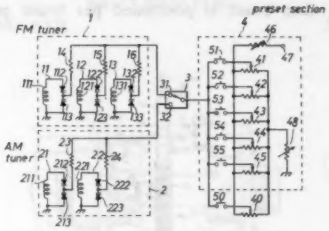
Juro Hoshi, Hamamatsu, Japan, assignor to Nippon Bakki Seizo Kabushiki Kaisha, Shiznoka-ken, Japan

Filed Mar. 23, 1971, Ser. No. 127,220

Int. Cl. H03j 5/04

U.S. Cl. 334—1 **7 Claims**

The FM-AM preset tuning device comprises an FM tuner including a plurality of tank circuits each having a variable capacitance diode; an AM tuner similarly constructed as the FM tuner; preset means including a plurality of voltage adjusters to adjust the voltages to be impressed upon respective variable capacitance diodes included in the tank circuits of the FM and AM tuners for pretuning respective tank circuits to the frequencies of respective FM and AM broadcasting sta-



tions to be selected, and a plurality of switches each associated with different one of the voltage adjusters; and at least one FM-AM changeover switch connected between the FM and AM tuners and the preset means for selectively connecting the preset means to either one of the FM and AM tuners.

3,755,764

ANTENNA COIL SUPPORT FOR A TUNER

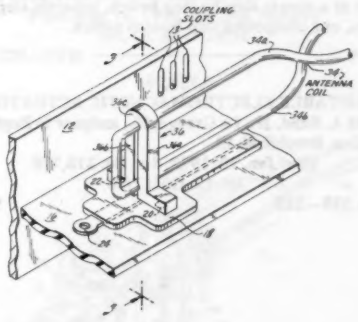
Takeo Suzuki, Tokyo, Japan, assignor to Alphs Electric Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 200,695

Claims priority, application Japan, Dec. 10, 1970, 45/123280

Int. Cl. H03j 5/02

U.S. Cl. 334—45 **17 Claims**



A tuner has an insulating member with a surface upon which is disposed a first electrically conducting element. A second electrically conducting element such as an antenna coil is mounted and directly supported on said member proximate said first element by a support means so as to be electromagnetically coupled thereto. Preferably, the second element has two reaches and said support is substantially U-shaped with a central aperture within which the reaches are disposed.

3,755,765

MULTI-LEVEL STEP-BY-STEP SWITCH

A. Lee Reaves, Jr., 355 Ruby St., Clarendon Hills, Ill.

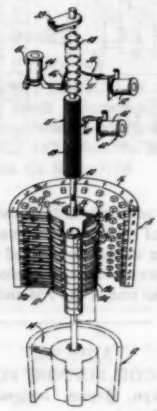
Filed May 26, 1972, Ser. No. 257,141

Int. Cl. H01h 67/08

U.S. Cl. 335—118 **17 Claims**

A multi-level Step-by-step switch capable of simultaneously serving a plurality of electrical circuits comprises at least one terminal bank with an associated set of brushes. The bank in-

cludes several vertically separated rows of contact terminals, and each of the brushes is permanently dedicated to a respective one of the rows. A two motion stepping mechanism provides sequenced vertical and rotary motion for independently positioning the brushes in engagement with selected ones of the contact terminals in their respective associated rows of terminals. One brush is positioned per brush positioning



operation, and after each such operation, the stepping mechanism is reset merely by gravity. For additional capacity, as well as for certain specialized applications, a plurality of terminal banks, with respective sets of brushes, may be vertically stacked to be served by a single stepping mechanism. The switch with stacked terminal banks may be configured to operate as a simple step-by-step switch, separate step-by-step switches, or a compound step-by-step switch.

3,755,766

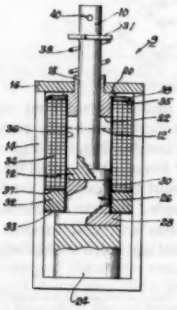
BISTABLE ELECTROMAGNETIC ACTUATOR

Reginald A. Read, Jr., La Grange, Ill., assignor to Regdon Corporation, Brookfield, Ill.

Filed Jan. 18, 1972, Ser. No. 218,770

Int. Cl. H01f 7/08

U.S. Cl. 335—229 **9 Claims**



A bistable electromagnetic actuator has an armature maintained in one stable position magnetically, by means of a permanent magnet, and in a second stable position by means of a spring. Either position may be assumed by energization of a coil with current of the appropriate polarity or by application of mechanical force. A magnetic shunt maintains flux through the permanent magnet during energization of the coil.

3,755,767

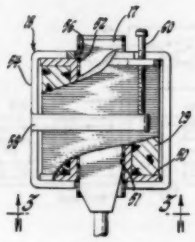
VARIABLE INDUCTANCE DEVICE

Robert R. Hendrickson, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1972, Ser. No. 315,342

Int. Cl. H01f 21/06

U.S. Cl. 336—20 **4 Claims**



In an electronic fuel injection system, a transducer for converting a variable pressure signal to a variable inductance comprises an inductive coil surrounding an axially reciprocable, magnetically permeable plunger. Two opposing sides of one end of the plunger are asymmetrically tapered; and a magnetically permeable flux member attached to the coil has portions adjacent the untapered end of the plunger and both sides of the tapered end of the plunger to create parallel flux paths through the plunger, each of which has a gap defined by one of the tapered sides and has a reluctance which varies with axial movement of the plunger. The portion of the flux member adjacent one side of the tapered end is transversely movable with respect to the plunger by a torque arm and adjusting screw so as to vary the slope of the inductance-plunger position curve.

3,755,768

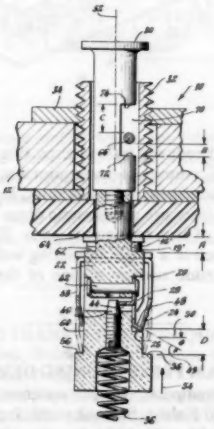
SWITCH BREAKER

William P. Riendeau, Leonardtown, Md., assignor to Aiken Industries, Incorporated, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,100

Int. Cl. H01h 71/16

U.S. Cl. 337—66 **8 Claims**



A circuit breaker is described wherein an automatic overload current circuit interrupting feature is combined with a manual switching feature. A latch plate has an abutment ledge surface for contact with a bimetallic element. The abutment ledge surface has a predetermined latch angle relative to a

plane which is normal to the axis of movement of the latch plate. The angle is selected to form a latch which may be manually overcome by movement of the latch plate against the bimetallic element to force the bimetallic element to slip off the abutment ledge surface. A range and preferred values of the latch angle are described.

3,755,769

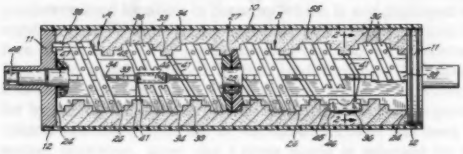
MODULARIZED FUSE WITH PRECISE GAP

Harvey W. Mikulecky, Racine, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Oct. 31, 1969, Ser. No. 873,771

Int. Cl. H01h *85/04*

U.S. Cl. 337—158 **5 Claims**



This current limiting fuse has a spider type support for the main fuse element. This support has a plurality of segments joined together serially by a cement-like composition. Preferably, these segments are of lengths for establishing fuse sizes corresponding to standard design voltage ratings such as 8.3 KV, 15.5 KV, 27 KV and 38 KV. An auxiliary fuse element may be wound on the spider type support and spaced from the main fusible element. A gap separates the main fusible element and at least one end of the auxiliary element. This gap is defined by the thickness of a porous tape member that forms an effective precise gap.

3,755,770

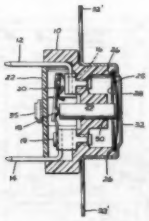
THERMOSTAT HAVING IMPROVED TEMPERATURE DRIFT CONTROL MEANS

Edward O. Andersen, Rock Falls, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 7, 1971, Ser. No. 205,485

Int. Cl. H01h *37/52*

U.S. Cl. 337—354 **31 Claims**



A thermostat is disclosed comprising a support and a thermally responsive bimetallic member having a peripheral section adjacent the support and a central section adapted for movement with respect to the peripheral section in response to temperature changes of the bimetallic member. First and second switch contacts are mounted for relative movement between switch contact open and switch contact closed positions. A spring is provided biasing one of the contacts. An actuating plunger is mounted between the bimetallic member and the spring for movement in response to movement of the bimetallic central section. Temperature drift control means are also provided which means include an energy absorbent dampener disposed between the bimetallic member peripheral section and the support.

3,755,771

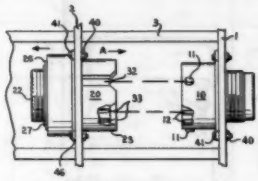
RACK AND PANEL CONNECTOR ASSEMBLY

Robert W. Brush, Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1972, Ser. No. 230,879

Int. Cl. H01r *13/62*

U.S. Cl. 339—64 R **32 Claims**



A blind mating rack and panel connector assembly in which nonaligned contacts of an unmated plug and receptacle are aligned upon mating by successive engaging cams of the connector assembly. The plug portion of the connector assembly includes a first and second shell that is mounted within the plug housing for radial and axial movement with respect to the plug housing. Upon mating of the plug and receptacle the first shell of the plug has a guide means that interacts with the receptacle to align previously nonaligned contacts. When the plug and receptacle are unmated the shells return to their original position.

3,755,772

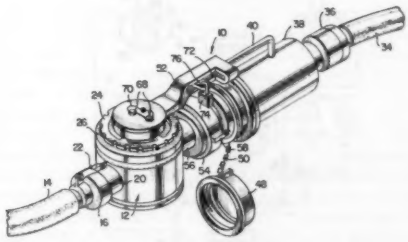
MECHANICAL INTERLOCK FOR ELECTRIC CIRCUIT

David M. Reed, P.O. Box 652, Martin, Ky.

Filed Aug. 16, 1972, Ser. No. 281,091

Int. Cl. H01r *13/54*

U.S. Cl. 339—75 R **9 Claims**



A mechanical interlock for components in an electric circuit necessitating a mechanical separation of mating parts which interrupts the electric circuit before access thereto or components thereof is possible, thereby preventing electric shocks to users.

3,755,773

LAMP-RETAINING SOCKET

George E. Johnson, Bronxville, N.Y., assignor to Levitron Manufacturing Co., Inc., Brooklyn, N.Y.

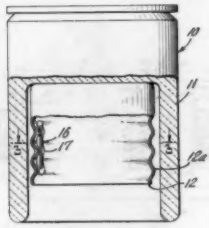
Filed Dec. 7, 1971, Ser. No. 205,487

Int. Cl. H01r *13/54, 17/20*

U.S. Cl. 339—75 R **2 Claims**

A lamp-retaining socket for a screw type lamp which prevents the lamp from accidentally becoming loose in the socket due to vibration or the like.

The lamp retainer comprises a thin strip of flexible and deformable material which is interposed between rolled threads of a screw shell and rolled threads on a lamp base. The strip extends over at least two of the threads and increases frictional engagement between the threads of the shell and



lamp base without interfering with introduction of the lamp into the screw shell or its removal therefrom. The retainer strip may be assembled with the screw shell prior to installation in a housing or it may be a clip which can be attached to the screw shell prior to the lamp being installed.

3,755,774

AXLE IDENTIFYING BRAKE WARNING SYSTEM

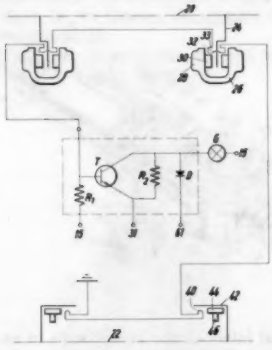
Heiner Wilhelmi, Hamburg, Germany, assignor to Jurid Werke GmbH, Glinde b. Hamburg, Germany

Filed Dec. 16, 1971, Ser. No. 208,786

Claims priority, application Germany, Dec. 22, 1970, P 20 63 005.1

Int. Cl. B60t 17/22

U.S. Cl. 340—52 A **4 Claims**



A brake condition warning system including conductor portions mounted on linings of drum type brake shoes so that the conductors are opened when the brakes reach a predetermined wear level but can be temporarily bridged by the counter friction surface upon reapplication of the brakes. Other conductor portions are mounted on frangible supports adjacent disc brakes but, upon destruction thereof, are not bridgeable, even temporarily. The system includes two axles, each having a different kind of brake, and a signal light and switching means to turn the light on when at least one portion is opened. Reapplication of the brakes tells the driver which axle has the brake which has reached the predetermined state of wear.

3,755,775

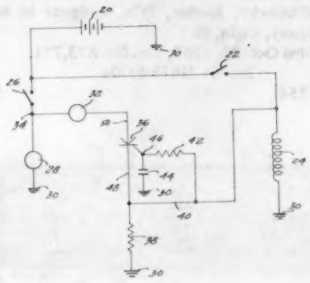
AUTOMOBILE LIGHT-ON INDICATOR

Frank L. Ward, Exeter, N.H., assignor to Clarostat Mfg. Co. Inc., Dover, N.H.

Filed Aug. 21, 1972, Ser. No. 282,596

Int. Cl. B60q 5/00

U.S. Cl. 340—52 D **3 Claims**



A buzzer and control inserted in the ignition system of a motor vehicle which will cause actuation of the buzzer in the event that the ignition is turned off while the lights remain on.

3,755,776

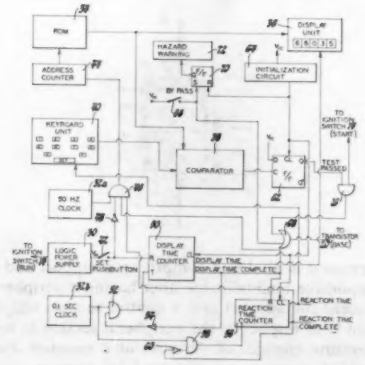
VEHICLE OPERATION INHIBITOR CONTROL SYSTEM

William A. Kotras, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 7, 1972, Ser. No. 241,964

Int. Cl. B60r 25/04

U.S. Cl. 340—53 **7 Claims**



A control system for inhibiting vehicle operation until the vehicle operator has performed a physiological test includes a read-only memory which stores a plurality of preselected multidigit numbers. The various locations in the memory are continuously sequentially addressed until operator initiation of a

SET pushbutton from a keyboard unit. The location in memory being addressed at the time of actuation of the SET pushbutton is displayed on a display unit for a predetermined interval of time. After the time interval has expired the displayed number must be entered into a comparator by the operator from a keyboard unit in order to start the vehicle. If the number is incorrectly entered or not entered within a predetermined time the operator may select another number from memory by actuating the SET pushbutton. After three consecutive unsuccessful attempts, however, the system is disabled for a thirty minute period. In addition to the primary task a divided attention task is incorporated in the system which requires the operator to perform an unrelated task such as actuation of the brake pedal during the tiee the number is being entered at the keyboard unit. Failure of either the primary or divided attention task prevents operation of the vehicle. The invention further includes apparatus for selecting a predetermined location in memory which is not displayed but must be entered through the keyboard unit by the operator before the primary or divided attention task can be performed. The code number stored in the predetermined location is known only to the owner of the vehicle. Means are provided for bypassing the primary and divided attention task to permit vehicle operation after the correct code number has been inserted. However, when the bypass mode is selected by the operator the vehicle's hazard warning s;ystem is actuated to indicate that the primary and divided attention task have not been performed.

3,755,777

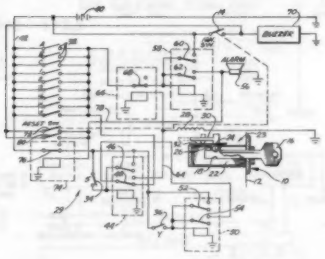
IGNITION CODE OVERRIDE DEVICE

Joseph K. Lee, 10616 Bramblebush, Whittier, Calif.

Continuation-in-part of Ser. No. 67,486, Aug. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 875,450, Nov. 10, 1969, Pat. No. 3,618,009, which is a continuation-in-part of Ser. No. 711,269, March 7, 1968, Pat. No. 3,541,505. This application Aug. 12, 1971, Ser. No. 171,191

Int. Cl. B60r *25/10*

U.S. Cl. 340—64 **4 Claims**



An automobile anti-theft system has an override mechanism for the ignition lock normally to prevent insertion of the ignition key into the lock. A number of pushbuttons located on the instrument panel are labeled to identify a secret code, and the bushbuttons are electrically coupled to the override mechanism to disable the mechanism when the proper code is selected. The pushbuttons are also electrically coupled to an alarm so that selecting an improper code activates the alarm.

3,755,778

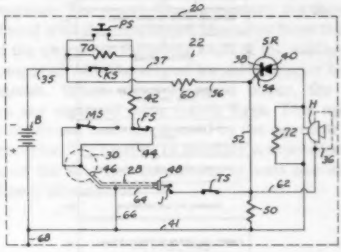
CYCLE BURGLAR ALARM

John J. Kennedy, P. O. Box 2125, Santa Clara, Calif., and Leon A. Wheeler, 5111 Yorkton Way, San Jose, Calif.

Filed May 4, 1972, Ser. No. 250,261

Int. Cl. B60r *25/10*

U.S. Cl. 340—65 **8 Claims**



Unauthorized use or movement of a cycle is prevented by an electrical circuit including tilt and tamper switches connected with a wheel engaging retractable cable and alarm device controlled by a key operated switch.

3,755,779

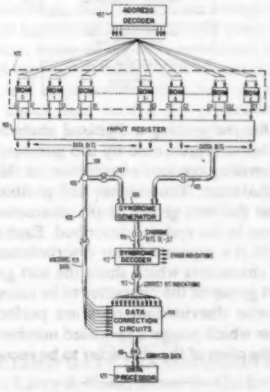
ERROR CORRECTION SYSTEM FOR SINGLE-ERROR CORRECTION, RELATED-DOUBLE-ERROR CORRECTION AND UNRELATED-DOUBLE-ERROR DETECTION

Donald Walter Price, Lake Katrine, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,751

Int. Cl. G06f *11/12*

U.S. Cl. 340—146.1 AL **41 Claims**

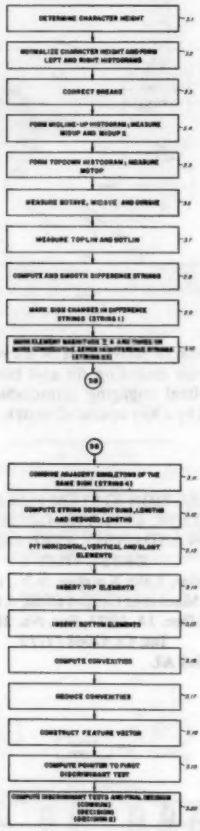


A system for correcting errors in a code word, including means for correcting single errors, means for detecting unrelated double errors and means for correcting related double errors in the code word. The system is particularly applicable to correcting errors in words generated from a memory system in which it is highly probable that if a double error occurs, it will occur in bits which are related to each other.

3,755,780
METHOD FOR RECOGNIZING CHARACTERS

John Sammon, Utica, and Jon Sanders, New York, both of N.Y., assignors to Pattern Analysis & Recognition Inc., Rome, N.Y.

Filed June 28, 1971, Ser. No. 157,443
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3 AC 131 Claims



A method for recognizing a digitized character. The shape of the character is represented by the number, positions and shapes of alternating contour convexities, as viewed from two sides of the character. The number and positions of the convexities define the sort group of the character, there being nine sort groups in the systems described. Each sort group has associated with it a separate linear discriminant logic test for every pair of characters which share the sort group. Depending on the sort group of the character to be recognized, the associated pairwise discriminant tests are performed, and the character class which passes a specified number of the tests is identified as the class of the character to be recognized.

3,755,781
COMMUNICATION SYSTEM POLLING METHOD

Lee C. Haas, and Lynn P. West, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

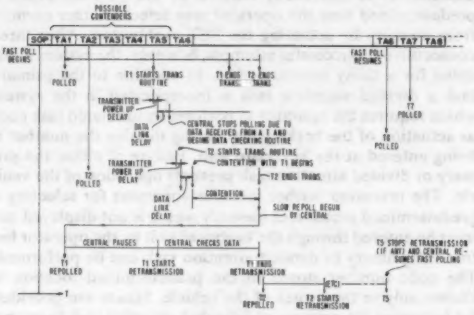
Filed Aug. 28, 1972, Ser. No. 284,308
Int. Cl. H04q 5/00
U.S. Cl. 340—147 R 12 Claims

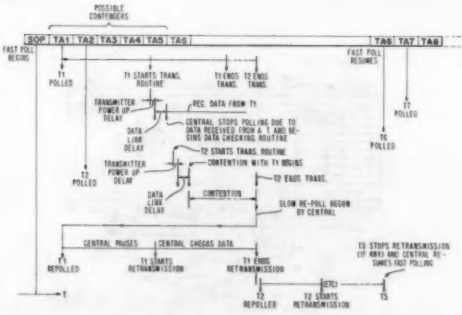
A polling scheme is disclosed in which a plurality of remote terminals or stations sharing a single communication channel are polled by a central station at a high speed to solicit responses therefrom. The central station can effectively handle responses from only one remote station at a time and, since a plurality of stations are polled, the possibility of contention between more than one remote station trying to respond during the same time period exists. If contention does occur, a second poll of possible contenders is conducted at a slow rate of speed to resolve the contention.

3,755,782
COMMUNICATION SYSTEM POLLING METHOD

Lee C. Haas; Larry D. Larsen, and Lynn P. West, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,310
Int. Cl. H04q 5/00
U.S. Cl. 340—147 R 12 Claims



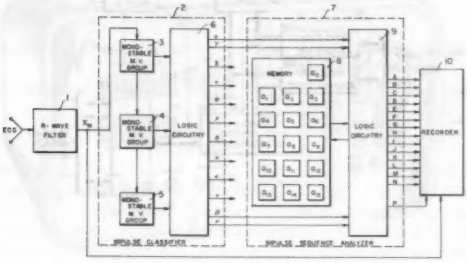


A polling scheme is disclosed in which a plurality of remote terminals or stations sharing a single communication channel are polled by a central station at a high speed to solicit responses therefrom. The central station can effectively handle responses from only one remote station at a time and, since a plurality of stations are polled, the possibility of contention between more than one remote station trying to respond during the same time period exists. If contention does occur, a second poll of possible contenders is conducted at a slow rate of speed to resolve the contention.

3,755,783
ARRANGEMENT FOR ANALYZING IRREGULARITIES IN REPETITIVE BIOLOGICAL PROCESSES

Garo Bohos Astarjian; Hristo Radev Hristov, and Chudomir Kirilov Nachev, all of Sofia, Bulgaria, assignors to Institut po Technicheska Kibernetika pri Ban, Sofia, Bulgaria

Filed Aug. 4, 1971, Ser. No. 168,816
Claims priority, application Bulgaria, Aug. 4, 1970, 15377
Int. Cl. A61b 5/04
U.S. Cl. 340—168 B 13 Claims

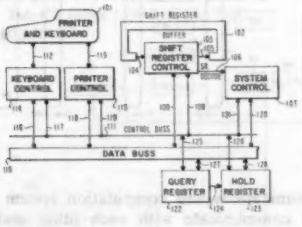


A biomedical analyzer detects the start and stop of different types of cardiac rhythm irregularities in a monitored patient and displays the results in real time. Each successive impulse representative of a dominant, normally repetitive component of the patient's heartbeat is instantly classified with respect to the elapsed time from the occurrence of a preceding impulse. An on-line computer adapted to recognize any of M predetermined irregular sequences of impulses responds to the successive classified impulses to outpulse a first indication at the start of each irregular sequence and to further outpulse one of T second indications at the conclusion of each sequence, each second indication being unique to the separate one of the T sequences. Each first and second indication is displayed on a suitable recorder in the time slot of a simultaneously occurring unclassified impulse.

3,755,784
SYSTEM FOR REVISION LINE RETRIEVAL

John C. Greek, Jr., and Howard C. Tanner, both of Austin, Tex., assignors to International Business Corporation, Armonk, N.Y.

Filed Feb. 1, 1972, Ser. No. 222,513
Int. Cl. G06f 3/10, 7/00
U.S. Cl. 340—172.5 11 Claims

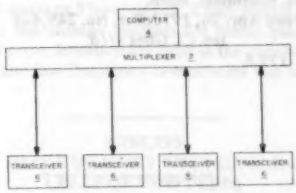


A system for locating a retrieving a particular line of text stored in a shift register memory. The system includes an input/output typewriter in electronic association with a dynamic shift register and two one-character registers. One of the one-character registers is a query register and the other a hold register. A line of text stored in memory along with other lines is located for printout and revision by entering a search mode and keying query characters representative of a revision point in the line. The revision point can be a misspelled word. A keyed query character representative of the first character making up the revision point is input into the query register. When matches among corresponding characters are found in memory they are replaced with match flags. These match flags define the next characters in memory which are to be compared with the next keyed query character. Spaces define the next characters in memory when the search mode is entered. After the second query character is keyed it is held in the query register and the first keyed character is transferred to the hold register. The match flags in memory are then sequentially replaced with the first keyed character from the hold register and the character following each of the replaced match flags is compared with the second keyed character held in the query register. When matches again occur, the matched characters are replaced with match flags. This operational sequence continues until terminated by the operator, whereupon an operation flag existing in memory is repositioned at the beginning of the first line containing at least one match flag and that line is printed out.

3,755,785
MULTIPLEXER

Robert T. Kirk, Ogden, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 6, 1972, Ser. No. 232,032
Int. Cl. G06f 3/04
U.S. Cl. 340—172.5 7 Claims



A multiplexer for interfacing between a computer and a plurality of transceivers, said multiplexer comprising an input gate connected to receive data from said computer and from said transceivers, a pair of registers connected to receive data passed by said input gate, output gate means operable to pass signals from said registers to either said computer or said transceivers, check sum means for generating check sum characters for data passed by said input gate, comparator means for comparing the check sum generated by said check sum means with a transmitted check sum, decoder means connected to detect end-of-transmission signals passed by said input gate, and a control unit for controlling the operation of said multiplexer.

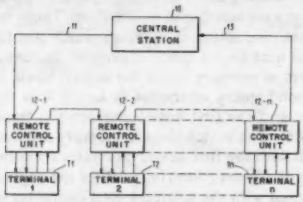
3,755,786
SERIAL LOOP DATA TRANSMISSION SYSTEM

Roy C. Dixon; Larry J. Hash; James D. Markov, and Lynn P. West, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,283
Int. Cl. H04j 3/00
U.S. Cl. 340—172.5 5 Claims

Bidirectionally communicating terminals are connected to a serial loop by interfaces which provide no delay. Communications are effected in fixed length time slots which include an indicia of the state of the slot. Slots carrying data to a terminal have the state indicia set to value which indicates that the slot

is in use. At the receiving terminal, the indicia is retained in the state if the terminal is to use the slot for transmitting data.



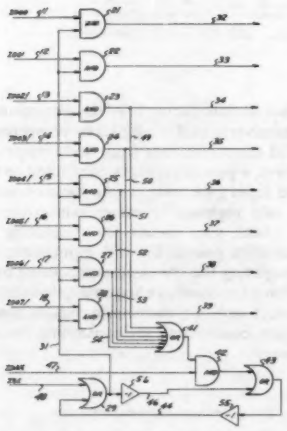
If the receiving terminal has no data to send, the state indicia is reset to a different value. In the reset state, the slot is available to subsequent terminals for the transmission of data.

3,755,787

SYSTEM FOR PROVIDING INTERRUPTS IN A NUMERICAL CONTROL SYSTEM

Hubert B. Henegar, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 26, 1972, Ser. No. 249,446
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **6 Claims**



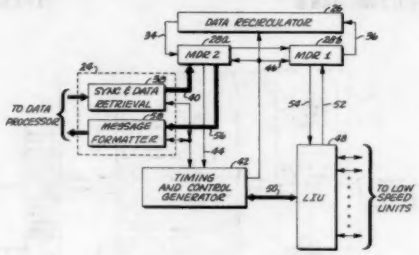
A system for reliably applying interrupts to a numerical control system is described. The computer which processes the control data of the Numerical Control System periodically checks to see if an interrupt from an external device is present. The inventive system constrains the interrupts to the least significant pulse positions of the device addresses. The presence of interrupt pulses at the more significant pulse positions results in the automatic disabling of an interrupt system. The reliability of the system is therefore greatly enhanced because illegal or erroneous interrupts do not disturb the normal functioning of the system.

3,755,788

DATA RECIRCULATOR

DeVer Charles Finch, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 1, 1972, Ser. No. 249,298
Int. Cl. G11c *19/00, 21/00*
U.S. Cl. 340—172.5 **5 Claims**



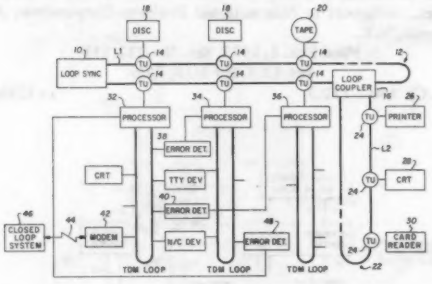
An improved recirculating memory emulates a sonic or a glass delay line unit by providing a recirculating device and data item location addressing means.

3,755,789

EXPANDABLE COMPUTER PROCESSOR AND COMMUNICATION SYSTEM

Arthur A. Collins, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Continuation-in-part of Ser. No. 74,783, Sept. 23, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 302,147
Int. Cl. G06f *5/06*; H04j *3/08*
U.S. Cl. 340—172.5 **11 Claims**

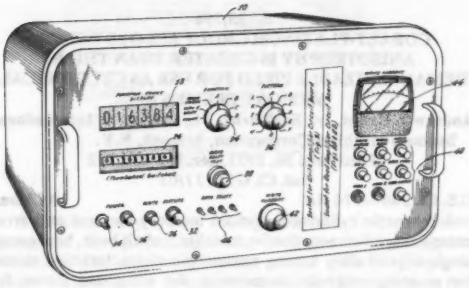


A communications and computation system wherein the processors communicate with each other and with other devices via a loop of continuously circulating data. The loop of data is comprised of channels which are time multiplexed on a bit basis in a repeating sequence. Further loops may be made of data circulating at lower speeds by extracting one of the channels from the main loop. The processors may each have a further time division multiplex loop attached thereto wherein one of the processors monitors the errors in each of the remaining processors for providing a centralized indication of system errors.

3,755,790
SECTOR AND ADDRESS TRACK WRITING INSTRUMENT FOR A ROTATING MAGNETIC MEMORY

James K. Berger, Sherman Oaks, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.

Continuation of Ser. No. 191,734, Oct. 22, 1971. This application Dec. 22, 1972, Ser. No. 317,536
Int. Cl. G06f *3/02*
U.S. Cl. 340—172.5 9 Claims

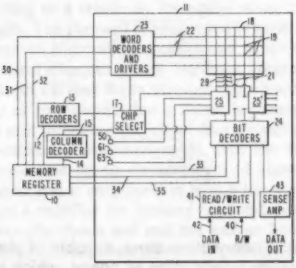


An instrument for providing accurately timed recording signals for the sector and address tracks in the rotating drum or disc-type magnetic memories of digital computers, data processors, and the like; and for performing a wide variety of counting and other functions which are essential in the development, manufacture and maintenance of such computers and data processing. The instrument of the invention has the capability of counting timing bits, or revolutions of the rotating memory of the computer or data processing equipment; and it also has the capability of writing origin pulses, multiple index markers, and sector markers on the drum or disc of such equipment; as well as of copying from one track to another of the memory of such equipment with a variable phase delay, of adjusting bit symmetry in the timing track of the memory in the equipment; and of many other functions. In addition, special plug-in pattern logic boards may be provided for the instrument to enable it to write particular address or sector tracks on the rotating memory of a computer or data processor in accordance with the user's individual specifications.

3,755,791
MEMORY SYSTEM WITH TEMPORARY OR PERMANENT SUBSTITUTION OF CELLS FOR DEFECTIVE CELLS

Luis Maria Arzubi, Colchester, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 1, 1972, Ser. No. 258,572
Int. Cl. G06f *11/00*; G11c *7/00*
U.S. Cl. 340—173 R 9 Claims



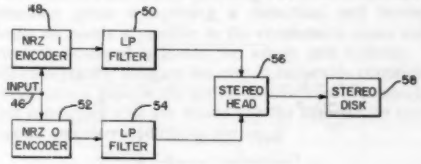
A memory storage system comprising both a main memory array and an alternate storage memory array coupled by a circuit that can either semipermanently or reversibly substitute the alternate array for a portion of the main array and retain the alternate array in its substituted position even when the memory is in a power down condition.

The described circuit achieves this by utilizing nonvolatile semiconductor devices arranged in a cross coupled configuration that can, if desired, be made to either temporarily or semipermanently substitute the alternate array for any desired portion of the main array.

3,755,792
DIGITAL DATA STORAGE SYSTEM

Norman L. Harvey, 381 Ocean Ave., Marblehead, Mass.

Filed Mar. 26, 1971, Ser. No. 128,449
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R 35 Claims

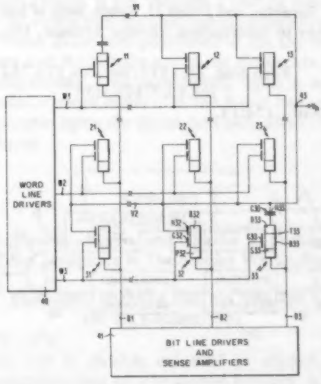


Method and apparatus for storing binary digital data on a storage medium such as a record disk, monaural or stereo, is provided. The data is converted to electrical signals which are encoded to 2 levels or 3 level signals, which signals are then inscribed upon the storage medium for future playback. Self clocking and error detection are built in the capabilities of the system. DC and low frequency components can also be handled.

3,755,793
LATENT IMAGE MEMORY WITH SINGLE-DEVICE CELLS OF TWO TYPES

Irving T. Ho, Poughkeepsie; Gerald A. Maley, Fishkill, and Hwa N. Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,793
Int. Cl. G11c *7/00*; H03k *25/02*; G11c *11/34*
U.S. Cl. 340—173 R 31 Claims



A latent image memory is selectively operable as either a read-write memory or a read-only memory. The memory comprises an array of cells each preferably consisting of a single active device. A first set of the cells are each adapted to store

either one of two binary digits. A second set of the cells are each responsive to a first condition for storing either one of two binary digits and responsive to a second condition for storing only a single predetermined binary digit. Means are provided for selecting either the first condition to render the array operable as a read-write memory, or the second condition to render the array operable as a read-only memory. Each of the cells of the first set preferably comprises a field-effect transistor connected to a capacitor, and each of the cells of the second set preferably comprises a charge-coupled device.

3,755,794

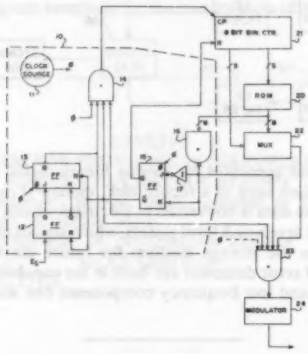
MESSAGE GENERATOR

Gary N. Stapleford, Londonderry, N.H., assignor to Comex Systems, Inc., Manchester, N.H.

Filed Feb. 25, 1972, Ser. No. 229,335

Int. Cl. G11c *13/00*

U.S. Cl. 340—173 R **7 Claims**



A message generator employing a read only memory to store segmental bit patterns of the message. A binary counter is employed to both address the memory as well as to control the conversion of the addressed message bit patterns from parallel to serial form.

3,755,795

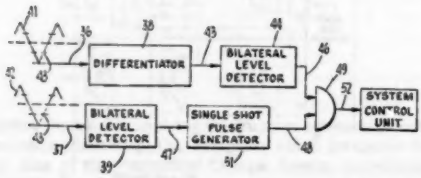
ARRIVAL DETECTION AND DATA TRANSFER CONTROL SYSTEM FOR DATA

Frank J. Sordello, and Frank D. Ruble, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Aug. 23, 1971, Ser. No. 173,752

Int. Cl. G11b *5/56*

U.S. Cl. 340—174.1 C **7 Claims**



A disc pack type of random access memory apparatus is described which includes a system for detecting when a read/write head arrives in the proximity of an addressed track location on a disc under conditions assuring that data can be transferred between the head and the track without data being erroneously transferred to or from adjacent tracks. A differentiator is provided for determining from a head position signal the velocity of the head at a preselected distance from the center of the track. Upon a detector indicating that the head velocity at such preselected distance is equal to or below a value at which the head will not overshoot the track center beyond the range within which data can be safely transferred, the system will direct the start of data transfer between the head and the track even though the head has not yet settled at the track location.

3,755,796

COBALT-PLATINUM GROUP ALLOYS WHOSE ANISOTROPHY IS GREATER THAN THEIR DEMAGNETIZABLE FIELD FOR USE AS CYLINDRICAL MEMORY ELEMENTS

Andrew J. Griest, Jr., Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,302

Int. Cl. G11c *11/02*

U.S. Cl. 340—174 NA **10 Claims**

A magnetic cylindrical domain memory element and array comprising a ferro-magnetic, metallic, cobalt base, hexagonal, single crystal alloy having anisotropic characteristics, means for creating magnetic domains in the alloy and means for maintaining and manipulating the domains in the alloy. The alloy is composed of more then 50 percent cobalt and contains an addition element depressing the saturation magnetization field of the cobalt, but stabilizing the hexagonal phase of the cobalt to a higher temperature. This improvement is achieved without materially changing the magneto-crystalline anisotropy inherent in the hexagonal cobalt structure. The addition elements include ruthenium, rhenium, osmium, rhodium, iridium, silicon, germanium, arsenic, and platinum.

3,755,797

ELECTRICAL INFORMATION STORE

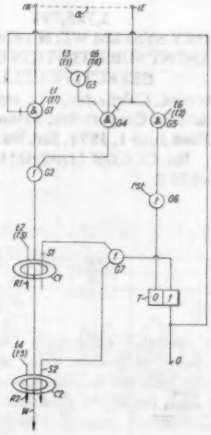
John Dawson, and Colin Bunting, both of Nottingham, England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Mar. 28, 1972, Ser. No. 238,880

Claims priority, application Great Britain, Apr. 13, 1971, 9,285/71

Int. Cl. G11c *11/06, 7/00*

U.S. Cl. 340—174 PC **1 Claim**

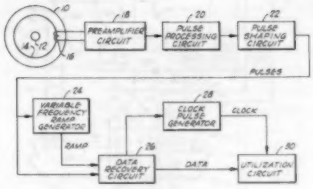


An electrical information store, capable of storing one binary digit despite interruption of power, which includes two magnetic storage cores having a common write circuit, the cores being read one at a time alternately, a core which has been read being re-written before the other core is read.

3,755,798
DATA RECOVERY SYSTEM HAVING TRACKING SAMPLING WINDOW

Michael C. Aguirre, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 29, 1972, Ser. No. 230,376
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 H 4 Claims

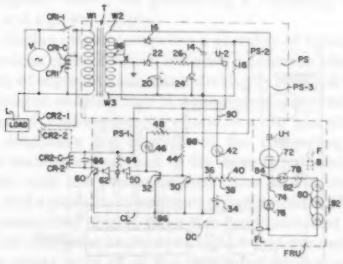


A data recovery system having a variable frequency ramp generator for producing ramp voltages having constant minimum and maximum values and a variable frequency phase locked to the frequency at which information is read from a magnetic media. The ramp voltages are applied to low and high threshold voltage detectors. These detectors and associated logic elements establish sampling windows which track the centers of information storage cells in spite of variations in cell length.

3,755,799
ULTRAVIOLET FLAME DETECTOR

Richard C. Riccardi, Mayfield Heights, Ohio, assignor to Pyronics, Inc., Cleveland, Ohio

Continuation of Ser. No. 88,705, Nov. 12, 1970. This application July 31, 1972, Ser. No. 276,659
Int. Cl. G08b *21/00*
U.S. Cl. 340—228 14 Claims

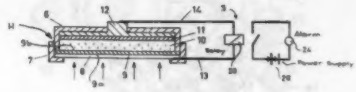


A flame detector is provided for indicating whether a flame is emitted from a burner. The detector includes an element which is sensitive to ultraviolet light and has a property of resistance falling to a relatively low value when exposed to ultraviolet light. The element is connected in series with a detector, a source of alternating current and a normally nonconducting control element which becomes conducting when a rectified direct current flows through the ultraviolet sensitive element so as to indicate that a flame is present. The flame responsive unit including the ultraviolet sensitive element and a series rectifier is interchangeable with the flame rod and burner connection of an earlier form of flame detector in which a flame rod is employed in which the flame and flame rod serve as a rectifier for causing rectified direct current to flow between the flame rod and the burner base through the flame detector circuit when a flame is present. In the event of a malfunction such as an open circuit or short circuiting of the ultraviolet sensitive element, the detector provides fail safe protection in that it guards against indicating the presence of a flame during any such malfunction.

3,755,800
AUTOMATIC FIRE ALARM DEVICE

Gustav Purt, Rapperswil, and Peter Weber, Stafa, both of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed July 10, 1972, Ser. No. 270,479
Claims priority, application Switzerland, July 15, 1971, 10437/71
Int. Cl. G08b *21/00*
U.S. Cl. 340—237 R 21 Claims

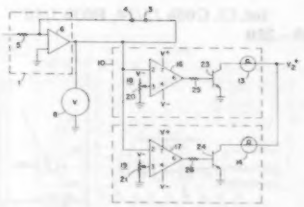


Automatic fire alarm incorporating a device for detection of combustion gases comprising a detection cell having a cathode, an anode accessible to the combustion gases and an electrolyte arranged between the anode and cathode. The anode catalytically oxidizes the carbon monoxide contained in the combustion gases while giving off electrons. An electrical circuit is coupled with the anode and the cathode for current detection and alarm indicating purposes.

3,755,801
DETECTING HELIUM LIQUID LEVEL

William C. Milo, Anaheim, Calif., assignor to the United States of America as represented by the Secretary of the Army

Filed Jan. 12, 1972, Ser. No. 217,180
Int. Cl. G08b *23/00*
U.S. Cl. 340—244 R 2 Claims



A constant current is fed through a pair of silicon diodes whose voltage varies with the heat sinking capability of its surrounding. These diodes are positioned at the top level of the liquid helium and the voltage across the diodes are compared by two comparators. One comparator lights a signal light whenever one or more diode is in the liquid helium, and the other comparator lights the signal light only when both diodes are in the liquid.

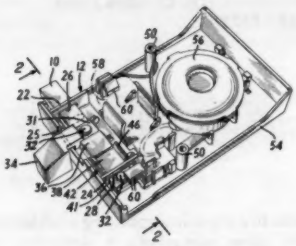
3,755,802
ALARM BOLT

Louis G. Bobrowski, Berlin, and Charles R. Suska, Roxbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Sept. 30, 1971, Ser. No. 185,308
Int. Cl. G08b *13/06*
U.S. Cl. 340—274 12 Claims

An alarm bolt is slidably mounted in aligned apertures through upstanding legs of a U-shaped bracket. A U-shaped spring having an inwardly extending protrusion on both upstanding arms is fastened to the bracket with the arms extending upwardly around opposite sides of the bolt. The protrusions on the arms of the spring engage and yieldably hold the bolt in its normal operating plane parallel to the door, but when sufficient lateral force is applied to the bolt, the arms

will spread and allow the bolt to pivot upwardly. Upward pivoting of the bolt out of its normal operating plane is permitted by an oversized aperture in one of the bracket legs. When the end of the bolt pivots upwardly it engages and closes a pair of spaced contacts suspended closely over the bolt to complete a circuit to an alarm buzzer which signals the



presence of the intruder. To shut off the buzzer, a restoring force must be applied from the inside of the locked door opposite in direction to the force applied by the intruder. A pair of diverging sloping lateral surfaces integral with the bolt registers with the spring when the bolt is slid open to restore the bolt to its normal sliding plane and open the contacts to silence the buzzer.

3,755,803

ELECTRONIC SURVEILLANCE SYSTEM

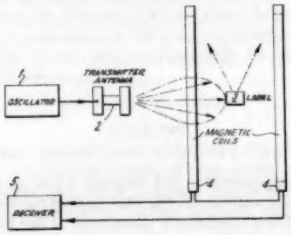
Peter Harold Cole, North Adelaide, and Richard Vaughn, Maroubra, New South Wales, both of Australia, assignors to Unisearch Limited, Kensington, New South Wales, Australia

Filed Mar. 31, 1970, Ser. No. 24,319

Claims priority, application Australia, Apr. 2, 1969, 52968/69

Int. Cl. G08b *13/24*; H03b *5/30*

U.S. Cl. 340—280 **14 Claims**



An electronic surveillance system in which a passive label attached to an article under surveillance is interrogated by means of a transmitted signal in a first form of energy, the label using the energy of that signal to return a signal to a receiver which gives an indication of the presence of the label if a reply signal has predetermined characteristics. In order to enable the receiver to distinguish the reply signal from the original transmitted signal the label is constructed to produce the reply signal in a form of energy different from that of the original transmitted signal. It is preferred that the first form of energy is accoustic energy and the second form of energy is electromagnetic energy.

3,755,804

LIQUID LEVEL SENSING SYSTEM AND APPARATUS

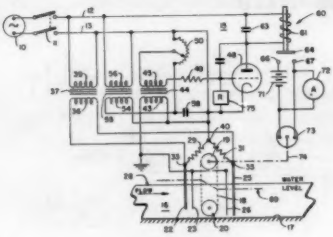
Walter P. Johnson, 510 S. Smith St., Aurora, Ill.

Filed Oct. 18, 1971, Ser. No. 190,135

Int. Cl. G08b *23/00*

U.S. Cl. 340—244 C **10 Claims**

First and second pairs of electrodes are partially immersed into liquid on opposite sides of a cleaning screen with the electrodes on the discharge side being immersed to a greater depth than the electrodes on the input side of the screen. The electrodes are connected in a bridge circuit, the output of which is connected in series with the secondary winding of a step-down



transformer supplied from a primary alternating current signal source. This series circuit is connected to the grid electrode of a triode which controls an alarm relay.

The electrodes in each of the pairs are parallel stainless steel electrodes separated by insulating spacers.

3,755,805

CHARACTER GENERATOR FOR PRODUCING CHARACTERS ON THE SCREEN OF A CATHODE-RAY TUBE

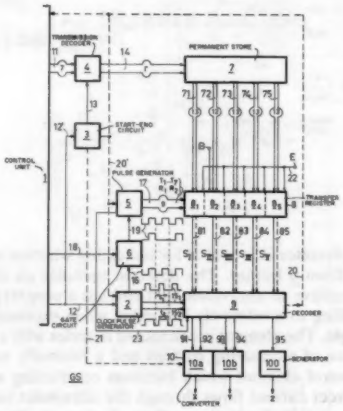
Pierre Dandrel, Sceaux, and Jean-Francois Moreau, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,528

Claims priority, application France, Mar. 5, 1970, 7007946

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **9 Claims**

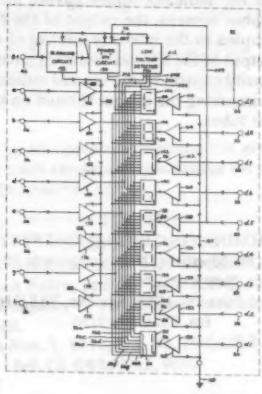


Ultra-rapid character generator for use with a cathode-ray tube operating on straight line segments and equipped with a permanent store from which by means of a store word address a character codeword is passed to a transfer register, which transfers the relevant character codeword sequentially in a number of relevant groups of 5 bits to a decoder, 3 bits determining 8 line segment directions, 1 bit determining a single or double line segment length and 1 bit determining the display or non-display.

3,755,806
CALCULATOR DISPLAY CIRCUIT

James H. Bunting, Acton, Mass., assignor to Bowmar/Ali, Inc., Acton, Mass.

Filed May 24, 1972, Ser. No. 256,286
Int. Cl. G08h 5/36
U.S. Cl. 340—324 R 20 Claims



A display circuit for use in an electronic calculator which includes a computing circuit for receiving and manipulating digital datum, the computing circuit including first means for repetitively generating a plurality of input signals individually in sequence and second means for repetitively generating a plurality of sequentially occurring groups of output signals with individual ones of the input and output signals occurring simultaneously, a plurality of input terminals, keyboard means for coupling the input terminals to receive selected ones of the input signals, means for generating a repeating clock pulse signal, and a power supply.

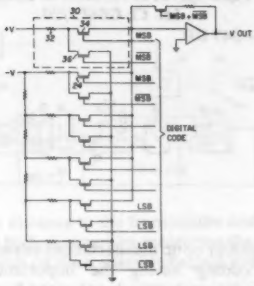
The display circuit comprises a plurality of luminescing display devices each of which includes a common element and a plurality of segment elements individually coupled to the common element and disposed in a geometric array corresponding to selected alpha-numeric characters. A plurality of digit driver amplifiers are coupled to the computing circuit to receive predetermined ones of the input signals and electricaly in series with the predetermined ones of the common elements, and a plurality of segment driver amplifiers are coupled to the computing circuit to receive predetermined ones of the signals of said groups of output signals and connected electrically in series with all of the paralleled similar segment elements of all of said display devices. The digit driver amplifiers and segment driver amplifiers are rendered simultaneously and momentarily operative in response to the simultaneous reception of the input signals and groups of output signals with essentially all of the electrical energy passing through the segment and digit driver amplifiers, respectively, also passing through the display devices. The display devices are rendered individually, momentarily, and sequentially luminescent thereby.

3,755,807
RESISTOR-LADDER CIRCUIT

James L. Brown, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Feb. 15, 1972, Ser. No. 226,475
Int. Cl. H03k 13/04
U.S. Cl. 340—347 DA 7 Claims

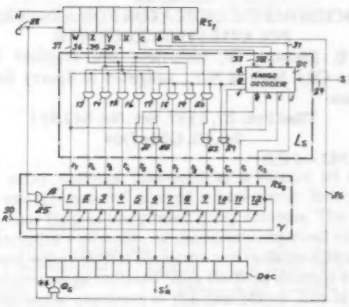
An accurate resistor-ladder circuit using field-effect transistor switches. The field-effect transistors have on-resistances related to each other by a power of two whereby the cumulative resistances of said ladder produce accurate digital-to-analog conversion. Advantageously, the related resistance values of the FET's are such as to lend themselves to integrated circuit implementation. Through use of "mirror" switch networks, deleterious effects of integrated circuit leakage currents are minimized.



3,755,808
BINARY-CODE EXPANDER

Giampiero Candiani, Milano, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed Sept. 2, 1971, Ser. No. 177,307
Claims priority, application Italy, Sept. 24, 1970, 30135 A/70
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 10 Claims



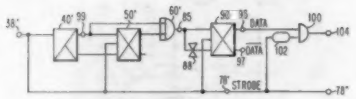
A compressed eight-bit word, including a polarity or sign bit Q_s, three range-indicating bits a, b, c and a group of four significant bits X, Y, Z, W, is reconverted into an original 12-bit word by introducing $(7 - n)$ zeroes between the sign bit Q_s and the significant group, with n representing the numerical value of the three-bit combination a, b, c, inserting a 1 just ahead of bit X unless $a = b = c = 0$, and adding a 1 (followed only by "0's") immediately behind bit W if this bit is in other than the No. 12 position. A logic matrix, forming part of a range decoder, receives the bits a, b, c from an eight-stage input register to control the transfer of significant bits X, U, Z, W to consecutive stages of a 12-bit expansion register, along with an immediately preceding 1 if any of the controlling bits has a finite value. This group of bits is followed in the expansion register by at least one 1 whose position determines the extent to which the significant group with its leading 1 must be shifted away from the sign bit Q_s invariably tranferred to the first stage of that register.

3,755,809

RPM CODING AND DECODING APPARATUS THEREFOR

Thomas Frank O'Rourke, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,234
Int. Cl. G06f 5/00
U.S. Cl. 340—347 DD **3 Claims**



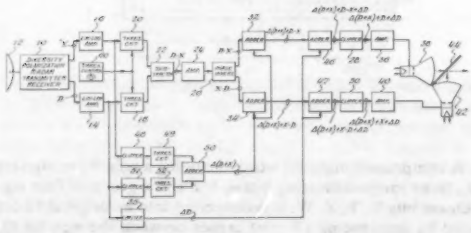
Magnetic and/or optic manifestations of retrospective pulse modulation coding having the important advantage of asynchronous data reduction is enhanced for ultimate utilization in synchronous data processing systems by electronic clocking signal deriving circuitry assembled from conventional logical circuit elements. Where some foreknowledge of the data bit rate is available, the jitter tolerance can be improved to 25 percent. A strobe pulse train, generated in conventional fashion, is applied to a timeout circuit having a period of the order of 1.5 baudel or the minimum spacing of the manifestations. A binary reciproconductive circuit, a "binary flip-flop" circuit for example, is enabled by the timeout circuit and triggered by the strobe pulses for pegging the state of the waveform of the preceding manifestation. The states of the waveform at the two comparison time points necessary in RPM decoding are compared, by a logical exclusive OR gating circuit for example. Another binary reciproconductive circuit at the output of the exclusive OR gating circuit preferably is used for regnerating the data signal.

3,755,810

DUOCHROMATIC INDICATOR FOR A DIVERSITY POLARIZATION RECEIVER

George R. Latham, IV, Plainview, and Winfield T. Allen, Garden City, both of N.Y., assignors to Sperry Rand Corporation

Filed Feb. 27, 1957, Ser. No. 642,911
Int. Cl. G01s 7/04
U.S. Cl. 343—5 CD **9 Claims**



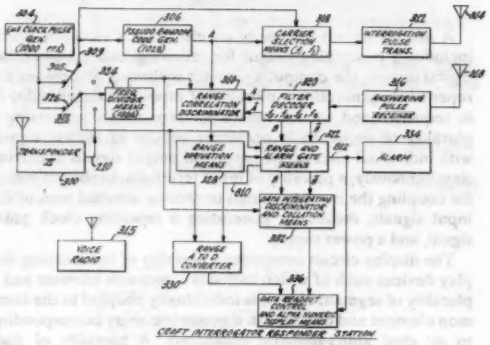
5. Radar apparatus for receiving radar echo signals of microwave energy, said means including means having two output channels for deriving separate output signals proportional in amplitude, respectively, to the directly-polarized and cross-polarized components of the received microwave energy, a subtracter circuit coupled to the respective outputs of the receiving means for producing a signal related to the difference between the two output signals, phase inverting means coupled to the difference signal output of the subtracter means for producing two signals of opposite sense, first and second amplitude discriminating means for passing strong echo signals having amplitudes between predetermined levels, means for coupling said outputs of said receiving means to respective ones of said amplitude discriminating means, amplitude limiter means coupled to one of the outputs of said receiving means, first summing means for additively combining the outputs of both said amplitude discriminating means, the output of said amplitude limiter means, and one of the outputs of said phase inverting means, second summing means for additively combining the outputs of both said amplitude discriminating means, the output of said amplitude limiter means, and the other output of said phase inverting means, a pair of cathode ray indicator tubes having different color-producing phosphor screens, the output of the first summing means being coupled to the intensity control of one indicator tube, and the output of the second summing means being coupled to the intensity control of the second indicator tube, and means for superimposing the images formed on the screens of the two indicator tubes.

3,755,811

DISCRIMINATING SIGNALING SYSTEM

Jack Breckman, Haddonfield, N.J., assignor to Radio Corporation of America, New York, N.Y.

Filed June 10, 1968, Ser. No. 735,716
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 R **24 Claims**



The disclosure is directed to a technique for discriminatingly extracting a subset of meaningful information signals from a babble of similar signals and then utilizing only the information contained in this subset. This technique is particularly suitable for use in an air collision avoidance system consisting of a plurality of essentially asynchronous interrogator-responder and transponder stations all of which utilize the same relatively long preselected pseudo-random code to provide the desired discrimination by correlation techniques.

3,755,812

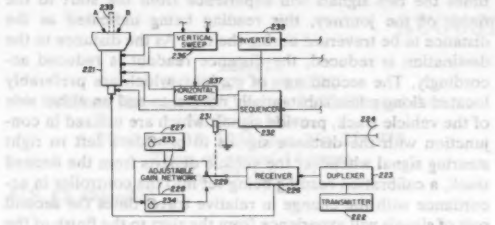
MOVING AND HARD TARGET INDICATOR

Bartow Bechtel, Richardson, and John L. Snyder, Garland, both of Tex., assignors to Texas Intruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1967, Ser. No. 694,748
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **34 Claims**

Apparatus for displaying video radar signals of moving and hard targets including a direct view storage tube displaying the area under surveillance on one 180° sector and the mirror image of the scanned area on the opposite 180° sector. A dichroic beam splitter mirror is positioned orthogonal to the surface of the storage tube along a diameter between the two

180° display sectors to color code the differences between the two displays. For airborne operations, the composite display is

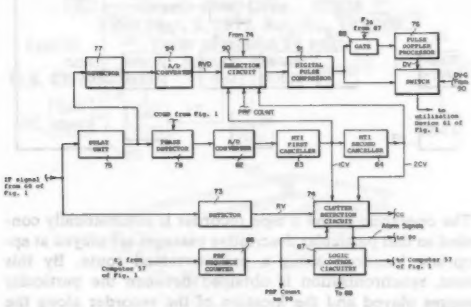


ground stabilized by an operator observing the ground track velocity and cross-track errors, and readjusting the display stabilization to null the observed error.

3,755,813
MOVING TARGET SIGNAL PROCESSOR

Norol T. Evans, San Pedro, and David D. Effinger, La Habra, both of Calif., assignors to The Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 1, 1971, Ser. No. 194,424
Int. Cl. G01s *9/42*, *9/10*
U.S. Cl. 343—7.7 **27 Claims**



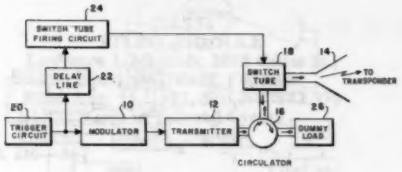
The moving target signal processor of one disclosed embodiment is adapted for use with a pulse compression type radar, and includes: a plurality of clutter canceller units having clutter rejection characteristics which are a function of the number of consecutive range sweeps, from any given antenna scan location, processed thereby; clutter detection circuits for providing alarm signals indicative of excessive clutter content in the uncompressed received signals and the canceller units' uncompressed output signals, respectively; and logic control circuits responsive to the alarm signals, for controlling the number of transmissions at each scan location so that the processor's output signals have less than a predetermined clutter energy content.

3,755,814
PRECISION TRANSPONDER SYSTEM

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 8, 1971, Ser. No. 113,748
Int. Cl. G01s *9/06*
U.S. Cl. 343—18 D **5 Claims**

A gas discharge tube is placed in the transmission line of radar to briefly interrupt the transmitted signal to form a notched pulse that is transmitted to a transponder. The notching is reproduced in the responding signal from the transponder by using the incoming RF signal itself to build up the responding signal. By this means, the uncertainty of the delay associated with the transponder is limited to a few cycles of radar frequency rather than a much larger time interval. At

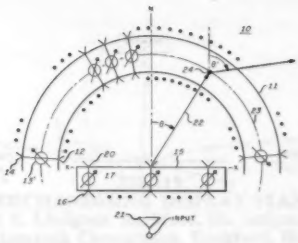


the radar receiver the distance to the transponder and back is then determined with high accuracy by measuring the time interval between the notch on the transmitted signal and that on the responding signal.

3,755,815
PHASED ARRAY FED LENS ANTENNA

John J. Stangel, Mahopac, and Pasquale A. Valentino, Brooklyn, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,863
Int. Cl. H04b *7/00*
U.S. Cl. 343—100 SA **20 Claims**



A phased array antenna functions as a source of electromagnetic energy directed toward a non-planar lens positioned in the near field of the phased array antenna. The non-planar lens includes a plurality of modules comprised of collector elements, phase shifter elements and radiator elements. Electromagnetic energy radiated from the feed antenna to the plurality of collector elements in the non-planar lens is coupled from the collector elements through the phase shifter elements to the radiating elements. Each phase shifter has a fixed delay which acts upon the electromagnetic energy transmitting through the phase shifter so that the electromagnetic energy radiated by the associated radiating element combines with the radiated energy from the other radiating elements to produce a beam having a modified scan angle relative to the scan angle of the emitted beam from the phased array antenna.

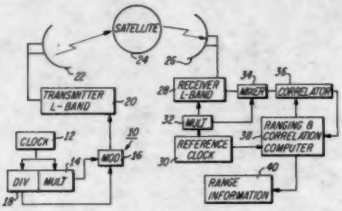
3,755,816
RADIO NAVIGATION SYSTEM

Dale L. Kratzer, Trevose, Pa., assignor to AII Systems, Moorestown, N.J.

Filed May 1, 1970, Ser. No. 33,748
Int. Cl. G01s *11/00*
U.S. Cl. 343—112 D **21 Claims**

The modulation of a radio signal transmitted from a satellite is correlated with a similar waveform generated by a stable oscillator at the receiver. The phase of the latter is varied in a

direction to correlate it with the transmitted modulation, and a change in phase is used as a measure of the distance travelled by the transmitted signal. If the transmitted carrier is



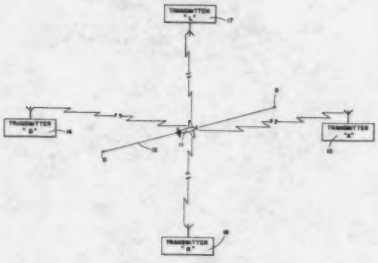
momentarily not received, the phase of the receiver waveform is not changed until communication is restored, and thereupon phase lock is restored and the phase change determined for the distance measurement.

3,755,817

RADIO NAVIGATION SYSTEM

Frank P. Wipff, and James A. Wilson, both of Prescott, Ariz., assignors to Airborne Navigation Corporation, Prescott, Ariz.

Filed May 21, 1971, Ser. No. 145,796
Int. Cl. G01s 5/02
U.S. Cl. 343—112 R **16 Claims**



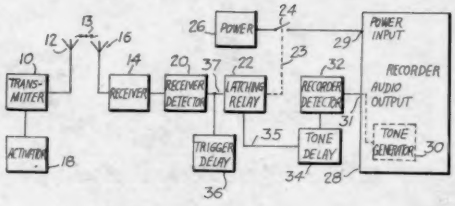
Guidance signals are provided for trips between two points by two pairs of radio signals transmitted from fixed locations. The first of these two pairs of signals which are used for making distance measurements are transmitted from locations essentially ahead of and behind the track between the starting and finishing points of the trip to be made. A controller on the vehicle is calibrated so that a reading is provided at the start of the journey in accordance with the change in relative travel times the two signals will experience from the start to the finish of the journey, this reading being indicated as the distance to be traversed during the trip. As the distance to the destination is reduced, the distance readout is reduced accordingly. The second pair of stations, which are preferably located along a line substantially normal to and on either side of the vehicle track, provide signals which are utilized in conjunction with the distance signals to provide a left ro right steering signal whenever the vehicle departs from the desired track, a calibration reading being set into the controller in accordance with the change in relative travel times the second pair of signals will experience from the start to the finish of the trip.

3,755,818

APPARATUS FOR AUTOMATICALLY SYNCHRONIZING THE OPERATION OF A DEVICE TO CORRESPOND WITH ITS MOVEMENT ALONG A PREDETERMINED ROUTE

Myron Greenspan, Brooklyn, N.Y., assignor to Patented Technology Company, Brooklyn, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,968
Int. Cl. H04b 7/00
U.S. Cl. 343—228 **11 Claims**

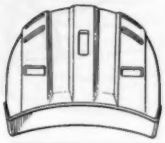


The operation of the a tape recorder is automatically controlled so that particular descriptive passages are played at appropriate locations along a predetermined route. By this means, synchronization is obtained between the particular passages played and the location of the recorder along the route so that each descriptive passage on a tape is played at a time when the recorder is approaching the point along the route described in the passage. Radio-control is used to trigger the recorder "on" while pre-recorded tone signals are placed on the tape at the end of individual passages to turn the recorder "off."

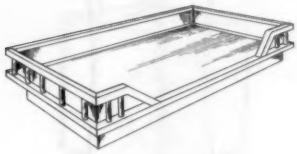
DESIGNS

AUGUST 28, 1973

228,211
HOCKEY HELMET
William Raymond O'Connor, 2190 Sargent Ave., St. Paul, Minn.
Filed Jan. 10, 1972, Ser. No. 216,910
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—231

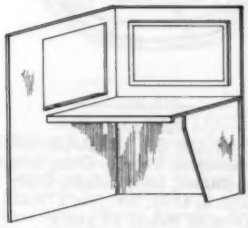


228,212
FRAME FOR A BED OR THE LIKE
Douglas Christiansen, 914 NW. E St., Grants Pass, Oreg. 97526
Filed Nov. 9, 1971, Ser. No. 197,200
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—81

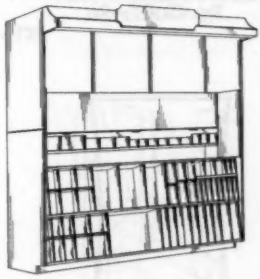


228,213
DISPLAY STAND
Charles James Johnston, 1 Killiney Terrace, Breffni Road, Sandycove, Ireland
Filed May 3, 1971, Ser. No. 140,015
Claims priority, application Ireland, Nov. 4, 1970
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—24

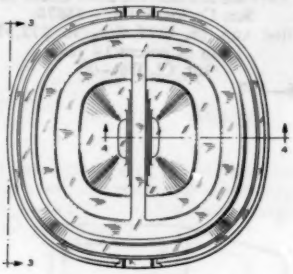
228,214
STUDY MODULE
Lawrence J. Michiels, 2060 Cedar St., San Carlos, Calif. 94070
Filed Aug. 16, 1971, Ser. No. 172,370
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—157



228,215
MERCHANDISING DISPLAY STAND
Carl E. Lindgren, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed July 1, 1971, Ser. No. 159,101
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168

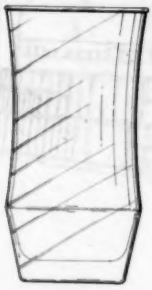


228,216
COVER FOR A FOOD STORAGE DISH
Harry Ray Hawley, Lombard, Ill., assignor to American Can Company, Greenwich, Conn.
Filed Feb. 9, 1971, Ser. No. 114,105
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—131



228,217
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 2, 1971, Ser. No. 177,536
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 28, 1987, has been disclaimed
Int. Cl. D7—*01*
U.S. Cl. D7—15

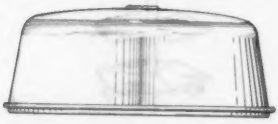
228,218
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 2, 1971, Ser. No. 177,538
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 28, 1987, has been disclaimed
Int. Cl. D7—*01*
U.S. Cl. D7—15



228,219
COMBINED EGG CUP AND SALT CELLAR
Fred Snyder, 53 W. 23rd St., New York, N.Y. 10010
Filed Dec. 6, 1971, Ser. No. 205,452
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5

228,220
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 2, 1971, Ser. No. 177,525
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 28, 1987, has been disclaimed
Int. Cl. D7—*01*
U.S. Cl. D7—15

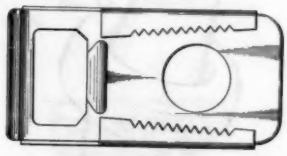
228,221
TRAY CLOSURE OR THE LIKE
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Nov. 2, 1971, Ser. No. 195,068
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—40



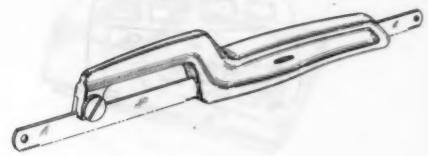
228,222
SALAD DRYER
Jean Mantelet, Paris, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France
Filed Aug. 2, 1971, Ser. No. 168,526
Claims priority, application Italy Feb. 2, 1971
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47

228,223
ADVERTISING DISPLAY REFUSE CONTAINER
William A Gilbert, Clayton, Mo., assignor to Clean City Squares, Inc., Clayton, Mo.
Filed Aug. 10, 1972, Ser. No. 279,617
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D7—191

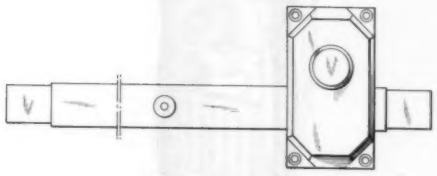
228,224
COMBINED TWIST AND PRY BOTTLE OPENER
Samuel Schlanger, 44 Forest Road, Valley Stream, N.Y. 12123
Filed July 12, 1971, Ser. No. 161,369
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—18



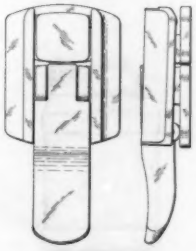
228,225
HANDSAW
Robert F. West, West Simsbury, and Laird F. Covey, Easton, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed May 3, 1971, Ser. No. 140,006
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—97



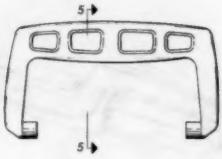
228,226
DOUBLE BAR LOCK
Richard D. Babcock, 216 Fillmore St., Massapequa, N.Y. 11758; Melvin A. Gervis, 295 Franklin St., Haworth, N.J. 07641; Eugene Taras, 46 Van Orden Road, Harrington Park, N.J. 07640; and Nicholas Giardina, 121 Wallace Ave., Mount Vernon, N.Y. 10552
Filed May 21, 1971, Ser. No. 146,000
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—117



228,227
CATCH FOR LUGGAGE OR THE LIKE
Lazlo Bako, Woodcliff Lake, N.J., assignor to Walter Kidde & Company, Inc., East Paterson, N.J.
Filed July 26, 1971, Ser. No. 166,331
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. 8—129



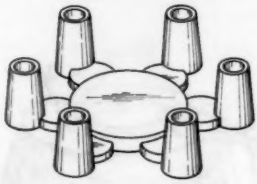
228,228
LUGGAGE HANDLE
Robert Cantor, Coleshill, England, assignor to Antler Limited, Bury, Lancashire, England
Filed Mar. 22, 1971, Ser. No. 127,092
Claims priority, application Great Britain Sept. 23, 1970
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154



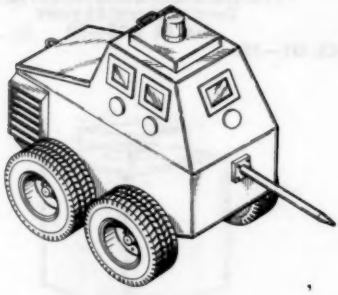
228,229
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Original design application Apr. 12, 1971, Ser. No. 133,486. Divided and this application Jan. 31, 1972, Ser. No. 222,425
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

228,230
CONTAINER FOR LIQUIDS
Gary L. Cutler, East Lansing, Mich., assignor to Cutler Plastics Corporation, Lansing, Mich.
Filed Apr. 14, 1972, Ser. No. 244,353
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—52

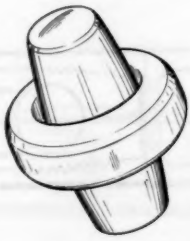
228,231
FLEXIBLE STRUCTURAL CONNECTOR
Bernard W. Tichy, Westbury, N.Y. (55 Florida St., Farmingdale, N.Y. 11735)
Filed Oct. 27, 1971, Ser. No. 193,232
Term of patent 14 years
Int. Cl. D8—*08;* D8—*09;* D25—*99*
U.S. Cl. D8—236



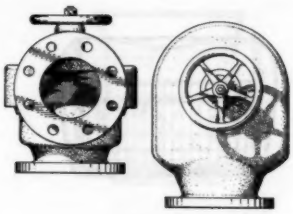
228,232
GAS INJECTING ARMORED VEHICLE
Dennis V. Miller, Wayzata, Minn., assignor to Tacord Corporation, Minneapolis, Minn.
Filed May 17, 1971, Ser. No. 144,357
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—3 R



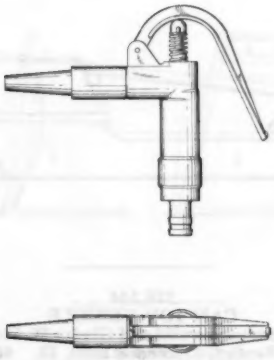
228,233
SWIMMING POOL FLOATING DISPENSER
Amello F. Fedrigo, 35750 Industrial Road, Livonia, Mich. 48150
Filed Jan. 7, 1972, Ser. No. 216,330
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



228,234
PRESSURE RELIEF VALVE
Jonathan A. Willetts, Rte. 3, P.O. Box 340–A, Annapolis, Md. 21403
Filed Feb. 2, 1971, Ser. No. 112,104
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

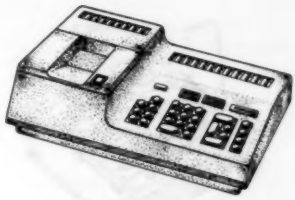


228,235
FLOW REGULATOR NOZZLE
Walter J. Otto, Wantagh, N.Y., assignor to Sethco Manufacturing Corp.
Filed Oct. 20, 1971, Ser. No. 191,143
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

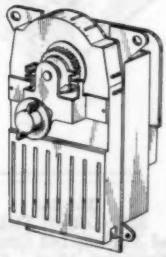


228,236
ELECTRONIC CALCULATOR
Takehiko Nakanishi, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Oct. 5, 1971, Ser. No. 186,827
Claims priority, application Japan, Apr. 12, 1971
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

228,237
ELECTRONIC CALCULATOR
Takehiko Nakanishi, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Oct. 5, 1971, Ser. No. 186,828
Claims priority, application Japan Apr. 12, 1971
Term of patent 3½ years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

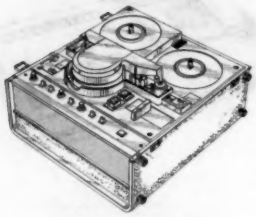


228,238
TUNER FOR TELEVISION RECEIVER
Yasuo Fujii, Osaka, Akio Hashima, Kyoto, Reiichi Sasaki, Osaka, and Tugio Ohigashi, Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 23, 1971, Ser. No. 211,830
Term of patent 14 years
Int. Cl. D14—*03*, 14—*99*
U.S. Cl. D26—14 E

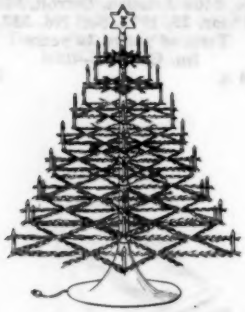


228,239
WRITING IMPLEMENT HOLDER FOR A TELEPHONE
George Bryce, 8400 Artesian, Detroit, Mich. 48228
Filed Mar. 23, 1972, Ser. No. 237,608
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. 26—14 A

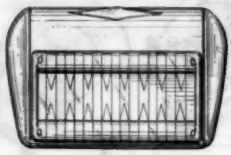
228,240
VIDEO TAPE RECORDER
Yoshio Yabuno, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 1, 1971, Ser. No. 177,212
Claims priority, application Japan Mar. 5, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



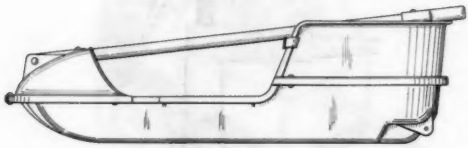
228,241
MENORAH TREE
Roland Auclair, 142 Summit Ave., Brookline, Mass. 02146
Filed Sept. 10, 1971, Ser. No. 179,618
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1 A



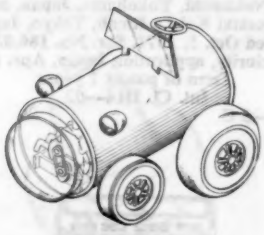
228,242
MANUALLY MANIPULABLE EDUCATIONAL GAME INDICATOR
Leonce Marie H. Kraffe De Laubarede, Begnins, Switzerland, assignor to Le Petit Prince, Vaduz, Liechtenstein
Filed June 9, 1971, Ser. No. 151,612
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 MM



228,243
SNOW SLED
Joseph Diemond, Simsbury, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Jan. 3, 1972, Ser. No. 215,258
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 C

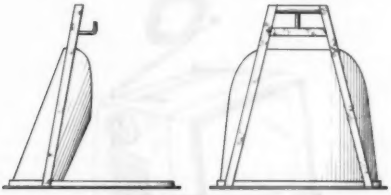


228,244
CAN TOY VEHICLE
Joseph F. Rozmarynowski and Gladys W. Stoll, both of 6001 Bentley, Clarendon Hills, Ill. 60514
Filed May 19, 1972, Ser. No. 255,302
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

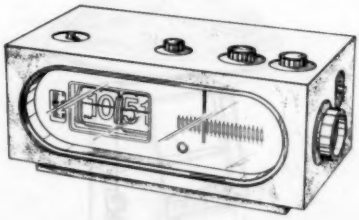


228,245
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 2, 1971, Ser. No. 177,524
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8 G

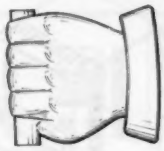
228,246
COMBINED SNOWMOBILE SUSPENSION STAND AND SAFETY GUARD OR SIMILAR ARTICLE
Charles F. Brightly, 3330 S. Cicero Ave., Cicero, Ill. 60650
Filed Apr. 5, 1971, Ser. No. 131,575
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D41—1 D



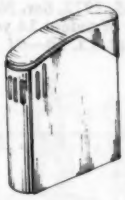
228,247
CLOCK-RADIO
Kikuo Ohta and Shuhei Taguchi, Osaka, Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan
Filed Dec. 20, 1971, Ser. No. 210,314
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



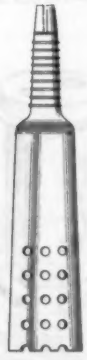
228,248
WATCH MOUNTING LINK FOR A WATCH BRACELET
Jeffrey Hassman, New York, N.Y., assignor to Jacoby-Bender, Inc., Woodside, N.Y.
Filed June 23, 1971, Ser. No. 156,170
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 B



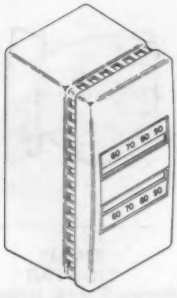
228,249
LIGHTER
Yoichi Ohsawa, Tokyo, Japan, assignor to Ohsawa Manufacturing Co., Ltd.
Filed Jan. 4, 1972, Ser. No. 215,453
Claims priority, application Japan Aug. 7, 1971
Term of patent 7 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



228,250
MOP WRINGER
Jack W. Young, 100 North "N," and James P. Boldrick, 400 Midland Tower Building, both of Midland, Tex. 79701
Filed Nov. 2, 1971, Ser. No. 195,066
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—29

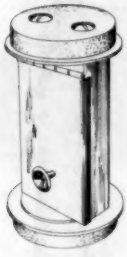


228,251
THERMOSTAT HOUSING OR THE LIKE
Edward P. Stucka, Deerfield, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 30, 1971, Ser. No. 185,465
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R

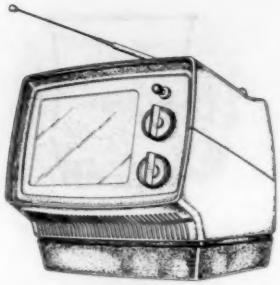


228,252
PACKAGE DISPENSER OR THE LIKE
Anthony J. De Bernardi, 34—41 85th St., Jackson Heights, N.Y. 11372
Filed May 25, 1972, Ser. No. 257,063
Term of patent 14 years
Int. Cl. 20—*01*
U.S. Cl. D52—2 R

228,253
VACUUM SYSTEM CARRIER
Bruce J. Diem, P.O. Box 30071, Cincinnati, Ohio 45230
Filed Aug. 9, 1971, Ser. No. 170,398
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D55—1 C

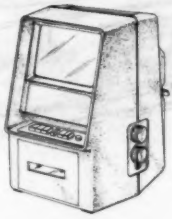


228,254
COMBINED TELEVISION RECEIVER AND BATTERY CASE
Osamu Ando, Tokyo, Japan, assignor to New Nippon Electric Co., Ltd., Osaka, Japan
Filed May 17, 1971, Ser. No. 144,364
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

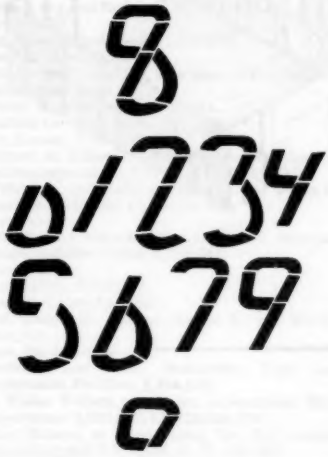


228,255
TELEVISION RECEIVER
Shinji Ikeya and Hiroshi Shimizu, Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed June 28, 1971, Ser. No. 157,797
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

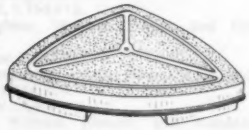
228,256
SLIDE PROJECTOR
Michiko Masuda and Masaaki Furukawa, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 17, 1972, Ser. No. 272,655
Claims priority, application Japan Jan. 17, 1972
Term of patent 7 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



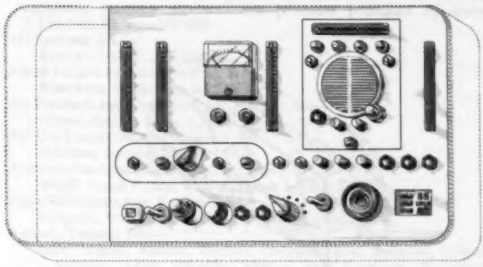
228,257
FONT OF ELECTRO-OPTICAL CHARACTERS
Brian Astle, Hightstown, N.J., assignor to Optel Corporation, Princeton, N.J.
Filed Feb. 17, 1972, Ser. No. 227,333
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12 B



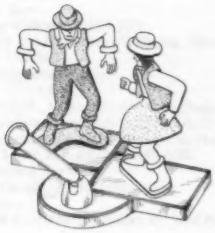
228,258
RAFT
Martin E. McClure, Bloomfield Hills, Mich., assignor to Diversified Glass Products, Inc., Rochester, Mich.
Filed Mar. 31, 1971, Ser. No. 130,052
Term of patent 14 years
Int. Cl. 21—*03*
U.S. Cl. D71—1 HH



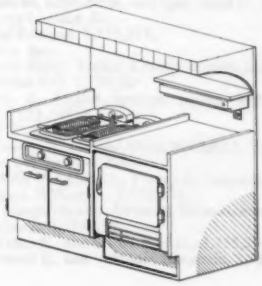
228,259
INDICATOR PANEL FOR A SECURITY ALARM SYSTEM PORTABLE TEST UNIT
James F. Pinkham, Kensington, Md., assignor to Multra-Guard, Inc., Hampton, Va.
Filed June 22, 1971, Ser. No. 155,688
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1 R



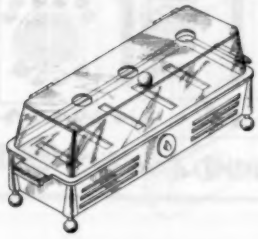
228,260
PENHOLDER DESK STAND
Michael Panarelli, 16 Burns Ave., Quincy, Mass. 02169
Filed June 29, 1971, Ser. No. 158,151
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A



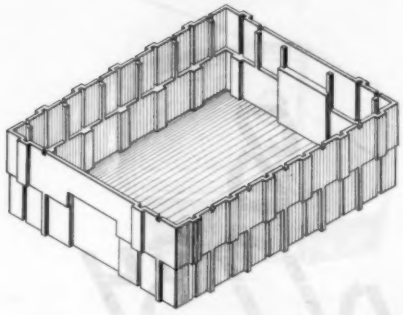
228,261
COMBINATION DEEP-FAT FRYER RANGE, REFRIGERATOR AND FOOD STORAGE UNIT
Donald M. Bull, Eugene, Oreg., assignor to D.A.C. Investment Corporation, Eugene, Oreg.
Filed Aug. 3, 1971, Ser. No. 168,804
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10 C



228,262
DRYER FOR BRUSHES AND COMBS
Glen R. Hunter, 11415 Ventura Blvd., Studio City, Calif. 91604
Filed Nov. 5, 1971, Ser. No. 196,256
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. 86—10 A



228,263
STACKING TRAY OR THE LIKE
Charles R. Jones, St. Louis, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed July 8, 1971, Ser. No. 160,974
Term of patent 3½ years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF AUGUST, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Carter, Sidney T.; and Jolda, Lorian J., 3,754,637.

Aaltonen, Olavi August: *See—*
Bryk, Petri Baldur; Honkasalo, Jorma Bruno; Malmstrom, Rolf Einar; Makipirtti, Simo Antero; Toivanen, Toivo Adrian; and Aaltonen, Olavi August, 3,754,891.

AB Centralsug: *See—*
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AB Instrumenta: *See—*
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Abbott Coin Counter Co.: *See—*
Conant, Barton C.; and Tao, Szee Ming, 3,754,558.

Abbott Laboratories: *See—*
Plotnikoff, Nicholas Peter, 3,755,584.

Abbott Machine Co., Inc.: *See—*
Abbott, Samuel, 3,754,718.

Abbott, Samuel, to Abbott Machine Co., Inc. End-finding means for yarn handling apparatus. 3,754,718, Cl. 242-35.60r.

Abbott, William J.; and Rathfon, George L., to Witco Corporation. Grease sealant. 3,755,166, Cl. 252-11.000.

Abe, Takao: *See—*
Igarashi, Yuriko; Kakutani, Haruko; Suzuki, Masayasu; Fukada, Makato; and Abe, Takao, 3,755,043.

Abex Corporation: *See—*
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Abitibi Paper Company, Ltd.: *See—*
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Abrahansson, Per-Olov: *See—*
Zetterstrom, Karl Axel; Wetterstad, Tage Lennart; and Abrahansson, Per-Olov, 3,754,576.

Abramitis, Walter William, to Akzona Incorporated. Mosquito larvicide compositions. 3,755,597, Cl. 424-304.000.

Adair, James Richard, to Wean United, Inc. Roll changing arrangement for a rolling mill. 3,754,426, Cl. 72-238.000.

Adams, Charles Wesley; and Meinhardt, Norman Anthony, to Lubrizol Corporation, The. High molecular weight carboxylic acid acylating agents and the process for preparing the same. 3,755,169, Cl. 252-35.000.

Adams, Phillip: *See—*
Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,755,448.

Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Blancafort, Antonio Ribera, to Boots Company, Limited, The. 2-(Mono- and difluoro-4-biphenyl)propionic acids. 3,755,427, Cl. 260-515.00a.

Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boote Company Limited, The. Treatment of peptic ulceration with xanthene derivatives. 3,755,593, Cl. 424-283.000.

Addmaster Corporation: *See—*
Clary, John G., 3,754,504.

Addressograph-Multigraph Corporation: *See—*
Sheffo, Loren; and Mathisen, Henry A., 3,754,820.

AEG-Elotherm GmbH: *See—*
Gerbig, Hans-Erwin; and von Starck, Axel, 3,754,634.

Aerojet-General Corporation: *See—*
Witz, Samuel; Carleton, Lee T.; Anderson, Howard H.; Moyer, Rudolph H.; and Neufeld, Harold A. (said Witz, Carleton, Anderson, and Moyer assors. to), 3,754,868.

Agfa-Gevaert Aktiengesellschaft: *See—*
Gehlert, Rolf, 3,754,818.
Hunig, Siegfried; Heilmann, Max; and Bergthaller, Peter, 3,754,918.
Riester, Oskar, 3,754,921.
Sobel, Johannes; Nittel, Fritz; Himmelmann, Wolfgang; and Pelz, Willibald, 3,754,919.

Agfa-Gevaert N.V.: *See—*
De Geest, Wilfried Florent; and Vandenabeele, Hubert, 3,754,924.

Agnone, Frank A. Universal dental extraction forceps. 3,754,331, Cl. 32-62.000.

Agrainier, Jean-Claude; and Chalony, Andre, to Commissariat a l'Energie Atomique. Nuclear fuel assembly. 3,755,077, Cl. 176-78.000.

Aguirre, Michael C., to Honeywell Information Systems Inc. Data recovery system having tracking sampling window. 3,755,798, Cl. 340-174.10h.

Ahr, Robert L.: *See—*
Rhodes, Philip H.; and Ahr, Robert L., 3,755,200.

Ahrens, Gerhard W. Method of preparing high concentration calcium ascorbate reaction products and products produced by same. 3,755,592, Cl. 424-280.000.

All Systems: *See—*
Kratzer, Dale L., 3,755,816.

Aiken Industries, Incorporated: *See—*
Riendeau, William P., 3,755,768.

Air Products and Chemicals, Inc., mesne: *See—*
Allam, Rodney John, 3,754,406.

Air-Dry Corporation of America: *See—*
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Airborne Navigation Corporation: *See—*
Wipff, Frank P.; and Wilson, James A., 3,755,817.

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Ishigami, Norinakira; and Ban, Massasi, 3,754,792.

Aizawa, Tsuneo: *See—*
Sato, Masao; Aizawa, Tsuneo; Ohnishi, Kenji; Kuizumi, Shigeo; Fukada, Akio; Kikuchi, Shinki; and Kusanagi, Schichiro, 3,754,490.

Ajax Magnethermic Corporation: *See—*
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Ajinomoto Co., Inc.: *See—*
Inazuka, Shinichi; Takehara, Masahiro; and Yoshida, Ryonosuke, 3,755,158.

Akabayashi, Hiroshi; Hoshiyama, Satoshi; and Takigawa, Shinichiro, to Nissan Kagaku Kogyo Kabushiki Kaisha. Separation of hydrocarbons from mixture thereof. 3,755,154, Cl. 208-314.000.

Akervall, Sven Erik: *See—*
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AKG Akustische u Kino-Gerate: *See—*
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Akzona Incorporated: *See—*
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Daimler, Berthold H.; Herveling, Wilhelm; Werner, Helmut; and Stapp, Hans, 3,754,362.

Aladdin Industries, Incorporated: *See—*
Bridges, John A., 3,754,640.

Alber, Edwin W.; Edwards, Grant C.; and Vaughan, David, to Grace, W. R., & Co. Preparation of zeolites. 3,755,538, Cl. 423-329.000.

Albrecht, Harry Allen; and Plati, John Thomas, to Hoffmann-La Roche Inc. Intermediates. 3,755,410, Cl. 260-465.600.

Albright & Wilson Limited: *See—*
Edwards, Alfred Gerald, 3,755,210.

Alburn, Harvey E.: *See—*
Fenichel, Richard L.; Grant, Norman H.; and Alburn, Harvey E., 3,755,569.

Aldridge, Clyde L., to Esso Research and Engineering Company. Low temperature shift reaction involving an alkali metal compound and a hydrogenation-dehydrogenation component. 3,755,556, Cl. 423-655.000.

Alexander, Robert Warren: *See—*
Rauscher, David Albert; and Alexander, Robert Warren, 3,754,845.

Alexoff, Peter, to Mitchell, George A., Company. Method and apparatus for severing tubing. 3,754,428, Cl. 72-331.000.

Alfa-Laval AB: *See—*
Troberg, Bengt Erik Mikael; and Claesson, Carl Olof, 3,754,532.

Allain, Charles V. Sugar cane planter. 3,754,682, Cl. 221-185.000.

Allam, Rodney John, to Air Products and Chemicals, Inc., mesne. Production of oxygen. 3,754,406, Cl. 62-41.000.

Allard, Norman F.: *See—*
Stepan, Ivan E.; Allard, Norman F.; and Suter, Carl R., 3,755,675.

Allegheny Ludlum Industries, Inc.: *See—*
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Allen & Hanburys Limited: *See—*
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Allen, James Roy: *See—*
Ellis, Wayne Philip; Foster, George Washington Elkins, Jr.; and Allen, James Roy, 3,755,029.

Allen, Kenneth A. Engine ignition circuit with uniform leads. 3,754,542, Cl. 123-148.00a.

Allen, Winfield T.: *See—*
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Allied Chemical Corporation: *See—*
Bridwell, Billy W.; Carlson, Emery J.; Edgecomb, Raymond H.; and Watson, William E., 3,755,551.
Decaprio, Joseph Donald; Dementi, Brian Armstead; and Lazarus, Stanley David, 3,755,251.
Demler, Walter R.; and Christ, Paul G., 3,755,291.
Gilbert, Everett E.; and Veldhois, Benjamin, 3,755,468.

Gould, Douglas E.; Young, David E.; Anderson, Lowell Ray; and Fox, William B., 3,755,405.
Weedon, Gene C.; and Crescentini, Lamberto, 3,755,497.

Allis-Chalmers Corporation: *See*—
Voth, James W.; and Speck, Albert J., 3,754,625.

Allis-Chalmers Manufacturing Company: *See*—
Wesoloski, Henry J., 3,754,674.

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Bachler, Sven; Akervall, Sven Erik; and Wallenstein, Sven, 3,755,634.

Alps Electric Co., Ltd.: *See*—
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Alsen, Kurt, to Salzgitter Aktiengesellschaft. Arrangement for continuously transferring loads units. 3,754,669, Cl. 214-14.000.

Aluminum Company of America: *See*—
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Alwin Manufacturing Company, Inc.: *See*—
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Alza Corporation: *See*—
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Amada Company Limited: *See*—
Sato, Masao; Aizawa, Tsuneo; Ohnishi, Kenji; Kuizumi, Shigeo; Fukada, Akio; Kikuchi, Shinki; and Kusanagi, Schichiro, 3,754,490.

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American Locker Co., Inc.: *See*—
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American Optical Corporation: *See*—
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Ametek, Inc.: *See*—
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Amicel, Charles Gustave: *See*—
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Amicon Corporation: *See*—
Testa, Anthony J., 3,755,264.

Amos, Homer C.; and Strickland, Edward T. Method of cleaning using a water-washable tacky elastomer. 3,754,991, Cl. 134-4.000.

AMP Incorporated: *See*—
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Anaconda Wire and Cable Company: *See*—
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Andersen, Edward O., to General Electric Company. Thermostat having improved temperature drift control means. 3,755,770, Cl. 337-354.000.

Anderson, Albert W., to General Electric Company. Control for series shunt motor. 3,755,724, Cl. 318-139.000.

Anderson, Andrew: *See*—
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Anderson, Charles L.; and Anderson, Andrew. Saw chuck. 3,754,330, Cl. 30-392.000.

Anderson, Donald R., to Nalco Chemical Company. Polymeric latices and sodium aluminate. 3,755,259, Cl. 260-29.60m.

Anderson, Glen W.: *See*—
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Anderson, Howard H.: *See*—
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Anderson, John Ernest. Portable bag holder. 3,754,785, Cl. 294-19.00r.

Anderson, Kenneth A.: *See*—
Krynski, John E.; Smith, William C.; and Anderson, Kenneth A., 3,754,659.

Anderson, Lowell Ray: *See*—
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Anderson, Paul L.; and Manning, Robert E., to Sandoz-Wander, Inc. 6-Substituted-1,2,4-pyrimido[4,5-e] thiadiazine-1,1-dioxides. 3,755,312, Cl. 260-243.00r.

Anderson, Ray B., to Texas Instruments, Incorporated. Automotive trim material. 3,754,874, Cl. 29-196.100.

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Anderson, Robert F.; and Menghi, George A., to American Cyanamid Company. Free flowing UV absorber compositions with magnesium or zinc salts of fatty acids. 3,755,450, Cl. 260-591.000.

Anderson, Robert F., to Universal Oil Products Company. Separate alkyl fluoride alkylation with a substantially pure hydrogen fluoride stream. 3,755,492, Cl. 260-683.480.

Andis, Allen Richard. Hydraulically-actuated omni-directional fluid valve. 3,754,574, Cl. 137-625.660.

Ando, Masao, to Chisso Corporation. Elongated heat-generating apparatus providing for a reduction in the highest voltage to be applied. 3,755,650, Cl. 219-301.000.

Ando, Ryo; and Fukushima, Tsutomu, to Nippon Kokan Kabushiki Kaisha. Continuous method of steel making. 3,754,892, Cl. 75-46.000.

Andrews, William P.; and Serio, Vincent J., Jr., to Reynolds Metals Company. Blank constructions for hermetically sealed cartons and methods of forming same. 3,754,456, Cl. 93-41.000.

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Angstadt, John W.: *See*—
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Anliker, Rudolf; and Liechti, Peter, to Ciba-Geigy AG. 4-Arotriazolyl-4'-aroxazolyl diphenyl derivatives. 3,755,343, Cl. 260-307.00d.

Anstalt Europaische Handelsgesellschaft: *See*—
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Antula, Jovan, to Max-Planck-Gesellschaft zur Foerderung der. Method of introducing impurities into a layer of bandgap material in a thin-film solid state device. 3,755,092, Cl. 204-35.00n.

Anvar-Agence Nationale de Valorisation de la Recherche: *See*—
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Appels, Johannes Arnoldus; Paffen, Maria Magdalena Mathilda; Kooi, Else; and Simons, Johannes Philippus Gerardus, to U. U.S. Corporation. Method of manufacturing a semiconductor device employing selective doping and selective oxidation. 3,755,014, Cl. 148-87.000.

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Apprich, Harry. Apparatus for the production of knit goods. 3,754,416, Cl. 66-106.000.

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Aquila, Werner: *See*—
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Asplund, Herbert F., to United Aircraft Corporation. Spring type ring seal. 3,754,766, Cl. 277-236.000.

Asselin, George F., to Universal Oil Products Company. Hydrocarbon isomerization and separation process. 3,755,144, Cl. 208-95.000.

Asselin, George F., to Universal Oil Products Company. Hydrorefining feed stock preparation. 3,755,151, Cl. 208-255.000.

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Aukrust, Egil; and John, T. Grant, to Jones & Laughlin Steel Corporation. Production of low-nitrogen high-chromium ferrous alloys. 3,754,900, Cl. 75-130.500.

Austin, Amory Earl, to Colgate-Palmolive Company. Means to inhibit overglaze damage by automatic dishwashing detergents. 3,755,180, Cl. 252-99.000.

Austin, Lowell W., to National Steel Corporation. Process for reducing discoloration of electrochemically treated chromium plated ferrous metal strip. 3,755,091, Cl. 204-35.00n.

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Avila, Arthur Julian; Jaeger, Raymond Edward; Miller, Thomas John; and Sauer, Harold Alfred, said Avila assor. to Western Electric Company Incorporated and said Jaeger, Miller and Sauer assor. to Bell Telephone Laboratories, Incorporated. Process for treatent of waste solutions. 3,755,530, Cl. 423-22.000.

Avilov, Valery Andreevich; Khidekel, Mikhail Lvovich; Eremenko, Olga Nikolaevna; Efimov, Oleg Nikolaevich; Ovcharenko, Alina Grigorievna; and Chekry, Pavel Semenovich. Hydrogenation catalyst. 3,755,194, Cl. 252-429.00r.

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Bales, John K. Multipurpose gas meter change valve. 3,754,573, Cl. 137-608.000.

Bales, John W., Jr.; and Orphoski, Michael A., to United States Steel Corporation. Method of making rim-stabilized steel ingots. 3,754,591, Cl. 164-57.000.

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Bates, Gary G. Device for watering trees and other plants. 3,754,352, Cl. 47-48.500.

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Bergthaller, Peter: *See—*
Hunig, Siegfried; Heilmann, Max; and Bergthaller, Peter, 3,754,918.
Beriger, Ernst, to Ciba-Geigy A.G. Pesticidal derivatives of 0,0-dialkyl-s-thiomorpholinocarbonylmenthyl-thiophosphates and dithiophosphates. 3,755,313, Cl. 260-243.00b.
Berkey Photo, Inc.: *See—*
Weisglass, Louis L.; Flieder, Robert A.; and Simmon, Alfred, 3,754,823.
Berkley Photo, Inc.: *See—*
Weisglass, Louis L.; Flieder, Robert A.; and Rubin, Lewis, 3,754,824.
Berkowitz, Sidney; and Carlberg, James R., to United States of America, Navy. Programmable feature extractor and speech recognizer. 3,755,627, Cl. 179-1.0sa.
Berlier, Richard A.; and Ritchie, Robert T., to International Business Machines Corporation. Development of electrostatic images. 3,754,962, Cl. 117-17.500.
Berman, Edel, to Warner-Lambert Company. Fertility control employing quinestrol and quingestauol acetate. 3,755,573, Cl. 424-238.000.
Bernardi, Giancarlo: *See—*
Sianesi, Dario; Bernardi, Giancarlo; and Veroli, Gianfranco, 3,755,235.
Bernt, Erich: *See—*
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Bertin & Cie: *See—*
Duthion, Louis; Jacquot, Michel Jules; Amicel, Charles Gustave; Chaube, Robert Augustin; and Jean, Francis Marie, 3,754,617.
Bertin, Daniel; and Pierdet, Andre, to Roussel-UCLAF. Estrogenic compositions comprising 11 Beta-alkoxy-gona-1,3,5 (10)-trienes. 3,755,574, Cl. 424-238.000.
Bertrand, Jean-Noel Marie; and Vaerman, Joseph Marie, to Labofina S. A. Process for the production of manganic carboxylates. 3,755,391, Cl. 260-429.00r.
Bethlehem Steel Corporation: *See—*
Dominguez, Ezekiel; Hitzrot, Henry W., Jr.; and Lynn, John D., 3,754,889.
Beverly, Gordon Maxwell, to Imperial Chemical Industries Limited. Aromatic polysulphones containing phosphorus compounds to increase melt stability. 3,755,256, Cl. 260-49.000.
Bey, Alvin E.; and Heffel, James R., to Dow Corning Corporation. Paper sized with carboxy-functional silicones. 3,755,070, Cl. 162-164.000.
Bey, Alvin E.; and Heffel, James R., to Dow Corning Corporation. Paper sized with carboxy-functional silicones. 3,755,071, Cl. 162-184.000.
Bhakuni, Roop S.; and Cormany, Joseph L., Jr., to Goodyear Tire and Rubber Company, The. Aliphatic diisocyanate finish additive. 3,755,165, Cl. 252-8.600.
Biagi, Alvaro; and McGarrett, Douglas, to Republic Electronics Industries Corp. Temperature and load compensated R.F. detector for peak power measurement system. 3,755,735, Cl. 324-95.000.
Biale, Giovanni: *See—*
Fenton, Donald M.; and Biale, Giovanni, 3,755,421.
Bigot, Bernard, to Products Chimiques Pechiney-Saint-Gobain and V.C.B. Union Chimique-Chimische Bedrijven. Process for the manufacture of phosphoric acid in the wet way. 3,755,539, Cl. 423-320.000.
Bills, Max E.; and Hansen, Henry J., Jr., to United States Steel Corporation. Cold rolled sheet. 3,754,873, Cl. 29-183.500.
Bindernagel, Ali; and Demny, Werner, to Kocks, Friedrich. Rolling mills. 3,754,425, Cl. 72-234.000.
Bio-Logics Products, Inc., mesne: *See—*
Ure, Spencer M.; Davis, Louis E.; Steinicke, Darrell B.; and Morrell, Robert L., 3,754,444.
Bio-Medical Sciences, Inc.: *See—*
Weinstein, Berel, 3,754,545.
Bird Machine Company: *See—*
Troland, Edwin P., 3,754,655.

Bither, Tom Allen Jr., to Du Pont de Nemours, E. I., and Company. Isotypic borates of aluminum, rhodium and thallium of calcite-type crystal structure. 3,755,536, Cl. 423-279.000.

Bittner, Richard W. Note-holding device. 3,754,663, Cl. 211-89.000.

Bitumem Industries Limited Slough, mesne: *See—*
Rose, Alan D., 3,755,066.

Bjorksten Research Laboratories, Inc.: *See—*
Guenther, Karl R., 3,754,867.
Paquette, Elmer Gordon; and Guenther, Karl Russell, 3,755,036.

Bjornson, Geir, to Phillips Petroleum Company. Conversion of halocarbon compounds. 3,755,474, Cl. 260-653.000.

Black, Sivalls & Bryson, Inc.: *See—*
McMinn, Robert E.; Tournoux, Paul M.; and Milnes, Donald S., 3,754,380.
Rosen, Ward F., 3,754,405.

Blair, Carl D., to Honeywell Inc. Tilt actuated liquid metal switch having a negative break angle. 3,755,643, Cl. 200-220.000.

Blair, James M.; Sebring, Michael; Underwood, Warren H.; and Bley, William P., to Armour and Company. Poultry carcass-treating process and apparatus. 3,754,302, Cl. 17-45.000.

Blancafort, Antonio Ribera: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Blancafort, Antonio Ribera, 3,755,427.

Blaney, Ted L., to Procter & Gamble Company, The. Method of separating fatty acids. 3,755,389, Cl. 260-419.000.

Blank, Elliott E., to Dow Chemical Company, The. Safety overcap for aerosol containers. 3,754,689, Cl. 222-402.110.

Blank, Werner Josef, to American Cyanamid Company. Copolymerization of C C a-olefin and acrylic acid or methacrylic acid. 3,755,272, Cl. 260-80.780.

Blanyer, Carl G., to Abex Corporation. Frequency deviation monitor. 3,755,734, Cl. 324-782.000.

Blattner, Hans: *See—*
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Blaw-Knox Company: *See—*
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Blazer, Benjamin V.; and El-Tahry, Mahmoud S., to Blazer Corporation. Cooling tower apparatus. 3,754,738, Cl. 261-30.000.

Blazer Corporation: *See—*
Blazer, Benjamin V.; and El-Tahry, Mahmoud S., 3,754,738.

Blenkinsop, Ward, & Company Limited: *See—*
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Bley, William P.: *See—*
Blair, James M.; Sebring, Michael; Underwood, Warren H.; and Bley, William P., 3,754,302.

Blomquist, Ruben; and Blumquist, Herbert. Motorcycle carrier hoist for vehicle bumper. 3,754,672, Cl. 214-450.000.

Blumenfeld, S. Morry: *See—*
Redington, Rowland W.; and Blumenfeld, S. Morry, 3,755,015.

Blumquist, Herbert: *See—*
Blomquist, Ruben; and Blumquist, Herbert, 3,754,672.

Bluntzer, Rene, to Ameco S.A. Gantry scraper. 3,754,633, Cl. 198-36.000.

Boals, Wayne S. Automatic control system for water heaters. 3,754,563, Cl. 137-94.000.

Bobrowski, Louis G.; and Suska, Charles R., to Stanley Works, The. Alarm bolt. 3,755,802, Cl. 340-274.000.

Bochinski, Julius H.; and Linkel, John E., to North American Rockwell Corporation. Hot gas fusion apparatus. 3,754,698, Cl. 228-42.000.

Bockstie, Lawrence G., Jr., to Corning Glass Works. Electrical resistor coated with flame-proof coating composition. 3,754,989, Cl. 117-219.000.

Bodesheim, Ferdinand; Wolf, Gerhard Dieter; and Nischk, Gunther, to Bayer Aktiengesellschaft. Disulfimide acid-modified high molecular weight polyamides. 3,755,263, Cl. 260-78.00r.

Bodman, Robert R., to United Aircraft Corporation. Filament reinforced rotor assembly. 3,754,839, Cl. 416-195.000.

Bodnar, Alfred D.; and Rudaitis, Edward J., to General Motors Corporation. Vehicle control apparatus. 3,754,480, Cl. 74-512.000.

Boehringer Ingelhelm G.m.b.H.: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, 3,755,413.

Boehringer Mannheim Gesellschaft mit beschrankter Haftung: *See—*
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Boeing Company, The: *See—*
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Boettner, George B.; and Spremulli, Paul F., to Corning Glass Works. Apparatus for melting thermoplastic material. 3,755,606, Cl. 13-6.000.

Bogie, Nelson H. Land clearing machine. 3,754,603, Cl. 172-45.000.

Bolhuis, John R., to General Motors Corporation. Method of determining the surface area of an irregular shape. 3,755,659, Cl. 235-151.300.

Boliden Aktiebolag: *See—*
Lindstrom, Nils Folke Rune, 3,755,111.

Bolter, John Reginald; and Kirby, Harry Ashley, to Reyrolle Parsons Limited. Steam turbines. 3,754,836, Cl. 415-136.000.

Boner, Charles Paul: *See—*
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Bonetti, Giovanni A.: *See—*
Rosenthal, Rudolph; and Bonetti, Giovanni A., 3,755,453.

Bonifas, James L., to Stellar Industries, Inc. Chain link. 3,754,477, Cl. 74-250.00r.

Bonikowski, Zbigniew; and Keen, Bruce Henry, to British Insulated Callender's Cables Limited. Methods of extruding plastic material. 3,755,516, Cl. 264-40.000.

Bonisch, Herbert: *See—*
Breitschwerut, Werner; Gmeiner, Gunter; Kolle, Erwin; and Bonisch, Herbert, 3,754,353.

Bonk, Joseph Paul, to Rollprint Packaging Products, Inc. Surgical pouches. 3,754,700, Cl. 229-62.000.

Bonnemann, Helmut: *See—*
Wilke, Gunther; and Bonnemann, Helmut, 3,755,386.

Booher, Richard N., to Lilly, Eli, and Company. Noracymethadol carbamates. 3,755,416, Cl. 260-471.00c.

Boone, Donald H.: *See—*
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Boone, Donald H.; Duhl, David N.; and Goward, George W., to United Aircraft Corporation. Nickel-base superalloy resistant to oxidation-erosion. 3,754,902, Cl. 75-171.000.

Boote Company Limited, The: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,755,593.

Booth, Albert B., to Hercules Incorporated. 8-halo-2-methene and its method of preparation. 3,755,472, Cl. 260-648.00r.

Boots Company, Limited, The: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Blancafort, Antonio Ribera, 3,755,427.

Borden Company, The: *See—*
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Borg, Paul E.: *See—*
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Borgaes, Edeltraut E.: *See—*
Berger, Arthur; and Borgaes, Edeltraut E., 3,755,326.

Borrini, Bartolomeo, to Olivetti, Ing., C., & C., S.p.A. Friction clutch. 3,754,413, Cl. 64-30.00r.

Bosch, Robert, G.m.b.H.: *See—*
Nusser, Herman; Van Eeden, Hendricus; and Ebert, Jurgen, 3,754,844.
Von Lowis, Alexander; and Trui, Josef, 3,754,795.
Wessel, Wolf; and Wahl, Josef, 3,754,537.

Boshagen, Horst: *See—*
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Bottenbruch, Ludwig: *See—*
Darson, Gerhard; Bottenbruch, Ludwig; and Schnell, Hermann, 3,755,467.

Boucher, Raymond; and Boudreau, Robert, to Hedstrom Company. Playseat with finger guard. 3,754,786, Cl. 297-5.000.

Bouchilloux, Jean; Fabre, Albert; and Faure, Alphonse, to Rhone-Poulenc S.A. Anisotropic organosilicon polymer membrane. 3,754,375, Cl. 55-16.000.

Boudreau, Robert: *See—*
Boucher, Raymond; and Boudreau, Robert, 3,754,786.

Bould, Fred; and Davies, Norman, to Westinghouse Electric Corporation. Circuit interrupter with contact actuating lever arm adjusting means. 3,755,639, Cl. 200-153.00h.

Bouligny, R. H., Inc.: *See—*
Pierce, John H., 3,754,530.

Boulin, Jacques R.; and Nepomiastchy, Alexis, to Societe Anonyme de Telecommunications. Method of building for electric filters. 3,755,762, Cl. 333-70.00s.

Bouvrande, Andre Maurice, to Societe De Telecommunications Electronique Aeronautique Et Maritime "T.E.A.M. Luminous switching key- or push-button. 3,755,661, Cl. 240-2.00s.

Bowen, Duane C. Tightwire sports equipment. 3,754,757, Cl. 272-60.000.

Bowman, E. W., Incorporated: *See—*
Bowman, Edward W., 3,754,885.

Bowman, Edward W., to Bowman, E. W., Incorporated. Jet fired zonal lehr for applying treating medium inside and outside of glass containers simultaneously. 3,754,885, Cl. 65-119.000.

Bowmar/Ali, Inc.: *See—*
Bunting, James H., 3,755,806.

Box, Theodor. Poultry transport cage. 3,754,676, Cl. 220-31.00s.

Boxman, Robert Walter, to Standard Tube Canada Limited. Table frame structures and corner constructions therefor. 3,754,728, Cl. 248-188.000.

Boy, Max W., 20% to Lee, Raymond, Organization, Inc., The. Conveyor belt clip. 3,754,636, Cl. 198-175.000.

Boycott, William A., Jr., to Udylite Corporation. Composition and method for suppressing spray in electrolytic process. 3,755,095, Cl. 204-51.000.

Boyer, Michel, to Bell Canada. Wired equipment shelf. 3,755,630, Cl. 179-98.000.

Brady, Donnie G.: *See—*
Gray, Roy A.; and Brady, Donnie G., 3,755,227.

Brady, Thomas G., to Bendix Corporation, The. Potting compound and method of potting. 3,755,241, Cl. 260-33.6ub.

Braid, Milton, to Mobil Oil Corporation. Phosphate or phosphite esters of (2-hydroxyalkyl) phosphorodithioates. 3,755,501, Cl. 260-928.000.

Brammall, Inc.: *See—*
Van Gompel, James J., 3,754,516.

Branham, Donald R.; and Borg, Paul E., to Pyramid Derrick & Equipment Corporation. Transportable drilling mast substructure with elevatable drawworks. 3,754,361, Cl. 52-115.000.

Brantley, Richard Kirvwn, to Du Pont de Nemours, E. I., and Company. Ureidopyrazoles as defoliants. 3,754,887, Cl. 71-74.000.

Braucksiek, Henry C.; Katchka, Jay R.; and Dykzeul, Theodore J., to Robertshaw Controls Company. Dual rate gaseous fuel burner assemblies. 3,754,853, Cl. 431-285.000.

Braun, B., Melsungen Aktiengesellschaft: *See*—
Hampel, Heinz, 3,754,644.

Braun, Oskar, to Xerox Corporation. Apparatus for placing rollers in contact in a pressure fuser assembly. 3,754,819, Cl. 355-3.000.

Braunberger, Benjamin A.: *See*—
Burrough, Donald E.; and Braunberger, Benjamin A., 3,754,383.

Breasbois, Lee H.: *See*—
Robertson, Gordon W.; and Breasbois, Lee H., 3,755,042.

Breckman, Jack, to RCA Corporation. Discriminating signaling system. 3,755,811, Cl. 343-6.50r.

Breitschwerut, Werner; Gmeiner, Gunter; Kolle, Erwin; and Bonisch, Herbert, to Daimler-Benz Aktiengesellschaft. Window lifter, especially for curved side windows of motor vehicles. 3,754,353, Cl. 49-227.000.

Brennan, Robert P.: *See*—
DeViney, Terrence E.; and Brennan, Robert P., 3,755,712.

Brenneisen, Paul; Callay, Jean-Jacques; and Margot, Alfred, to Ciba-Geigy Corporation. Isothiocyano-diphenylamines. 3,755,406, Cl. 260-454.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Board game apparatus. 3,754,763, Cl. 273-134.00b.

Breslow, Jeffrey Dale; and Jaworski, Eugene, to Glass, Marvin, & Associates. Round-about game apparatus. 3,754,759, Cl. 273-1.00r.

Brewing Patents Limited: *See*—
Palmer, Godfrey Henry Oliver, 3,754,929.

Brichta, Franz, to SKF Kugellagerfabriken GmbH. Method and apparatus for lubricating rotating bearings. 3,754,622, Cl. 184-1.00d.

Bridges, John A., to Aladdin Industries, Incorporated. Insulated tray and cover therefor. 3,754,640, Cl. 206-4.000.

Bridges, Richard J.; and Harper, Paul D. Apparatus for electrode rapper control. 3,754,379, Cl. 55-104.000.

Bridwell, Billy W.; Carlson, Emery J.; Edgecomb, Raymond H.; and Watson, William E., to Allied Chemical Corporation. Reduction of sulfur dioxide. 3,755,551, Cl. 423-570.000.

Briggs & Stratton Corporation: *See*—
Harkness, Joseph R., 3,754,543.

Briggs, Forrest A., to Standard Register Company, The. Slip clutch drive mechanism. 3,754,412, Cl. 64-29.000.

Brigham, Donald A.: *See*—
Grossman, Leonard N.; and Brigham, Donald A., 3,755,188.

Brill, Frank D., to Seeburg Corporation of Delaware, The. Infusor drive means. 3,754,462, Cl. 99-287.000.

Bristol-Myers Company: *See*—
Doyle, Terrence W.; Morris, Leeson R.; and Menard, Marcel, 3,755,432.

Bristow, Norman William: *See*—
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British Insulated Callender's Cables Limited: *See*—
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British Steel Corporation: *See*—
Jackson, Albert Edward; and Williams, Ernest Wynne, 3,755,090.

Britt, Jack; and Rodgers, Leonard John, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty, Government of the. Gas turbine engine thrust reversers. 3,754,708, Cl. 239-265.290.

Broadfoot, John T. Apparatus for pneumatically placing semi-fluid materials. 3,754,683, Cl. 222-134.000.

Broekman, Frederik W.: *See*—
Tendeloo, Henricus J. C.; Broekman, Frederik W.; Stroer, Wouter F. H.; and Silmelink, Johannes J., 3,755,585.

Broll, Richard; and Heymer, Gero, to Knapsack Aktiengesellschaft. Powdered fire extinguishing agents. 3,755,163, Cl. 252-7.000.

Brooks, Herman H.: *See*—
Phillips, David T.; Brooks, Herman H.; Wyatt, Philip J.; and Liu, Chelcie R., 3,754,830.

Brooks, Houston George, Jr., to American Cyanamid Company. Cobalt dicyclohexyldithiophosphinate and stabilization of polyolefins therewith. 3,755,396, Cl. 260-439.00r.

Brooks, Lester A.; and Harvey, Allan M., to Vanderbilt, R. T., Co., Inc. Certain triazines used to control bacteria and fungi. 3,755,590, Cl. 424-249.000.

Brophy, Robert J.: *See*—
Nicolson, Alexander M.; and Brophy, Robert J., 3,755,696.

Brown, Bernard Beau; and Swidinsky, John, to CPC International Inc. Preparation of 3-furoate esters. 3,755,378, Cl. 260-347.500.

Brown, Blancthon Starr; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. 1,3-Disubstituted-1-vreido-1',3'disubstituted-1'vreido sulfides. 3,755,437, Cl. 260-545.00r.

Brown, Boveri & Cie AG: *See*—
Kleinschmager, Herbert, 3,754,995.

Brown, Carl A., to Parkin-Hannifin Corporation. Fluid filtering device. 3,754,648, Cl. 210-90.000.

Brown, Edward A.; and Laos, Ivar, to Searle, G. D., & Co. Trialkylsilyl ethers of 17α-alkynylestra-1,3,5 (10)-triene-3-17β-diols and 11β-alkyl derivatives thereof. 3,755,384, Cl. 260-397.500.

Brown, James L., to Collins Radio Company. Resistor-ladder circuit. 3,755,807, Cl. 340-347.0da.

Brown, Melancihon S.; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. O,O-dihydrocarbyl-N-alkylithio or N-arylthio phosphoroamidothioail. 3,755,507, Cl. 260-947.000.

Brown Oil Tools, Inc.: *See*—
Garrett, Henry U., 3,754,597.

Brown, Richard L., to Bally Manufacturing Corporation. Ball sweeper apparatus for ball rolling games. 3,754,762, Cl. 273-124.00a.

Bruck Industries, Inc.: *See*—
Winkler, Alexander, 3,755,058.

Bruning, Paul, to Westfalia Separator A.G. Self cleaning centrifuge drum with a piston valve defining one side of the sludge chamber. 3,754,701, Cl. 233-20.00a.

Bruno, Michael. Luggage rollers. 3,754,773, Cl. 280-47.13r.

Brunswick Corporation: *See*—
Stout, Thomas C.; and Kaiser, Andrew J., 3,754,697.

Brush, Robert W., to Bendix Corporation, The. Rack and panel connector assembly. 3,755,771, Cl. 339-64.00r.

Bryk, Petri Baldur; Honkasalo, Jorma Bruno; Malmstrom, Rolf Einar; Makipirtti, Simo Antero; Toivanen, Toivo Adrian; and Aaltonen, Olavi August, to Outkumpu Oy. Method of producing iron-poor nickel sulphide matte from sulphidic nickel concentrates in suspenion smelting thereof. 3,754,891, Cl. 75-23.000.

Buchanan, Melvin L.: *See*—
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Buchel, Karl Heinz: *See*—
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Budde, Paul B.: *See*—
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Budzyna, Joseph M., to North American Rockwell Corporation. Loom picker. 3,754,579, Cl. 139-159.000.

Buehler, Arthur: *See*—
Riat, Henri; and Buehler, Arthur, 3,755,379.

Buike, George W.; and Haboush, William P., II, to Ford Motor Company. Carburetor air/fuel distribution control. 3,754,739, Cl. 261-50-a.

Bullard, Edward M., to Mobil Oil Corporation. Blends of polyolefins with isobutene-dipentene copolymer and films therefrom. 3,755,502, Cl. 260-897.00a.

Bullock, Greg Alan, to Du Pont de Nemours, E. I., and Company. Quinazolindne fungicides. 3,755,582, Cl. 424-251.000.

Bullock, Ronald E., to General Dynamics Corporation. Structural shapes having improved physical properties. 3,755,060, Cl. 161-143.000.

Bumerl, Milan, to Vedecky lesnicky ustav Vysoke skoly zemedelske v Praze. Electrode for barking of timber by electric current. 3,754,584, Cl. 144-208.00r.

Buning, Robert; and Frick, Siegmund, to Dynamit Nobel Aktiengesellschaft. Cross-linked articles and coatings of vinyl chloride polymers and process for their manufacture. 3,755,252, Cl. 260-46.50r.

Bunting, Colin: *See*—
Dawson, John; and Bunting, Colin, 3,755,797.

Bunting, James H., to Bowmar/Ali, Inc. Calculator display circuit. 3,755,806, Cl. 340-324.00r.

Burke, Richard L., to Colgate-Palmolive Company. Abrasive cleaning compositions. 3,754,878, Cl. 51-307.000.

Burke, Richard L., to Colgate-Palmolive Company. Removal of metallic stains from porcelain surfaces. 3,754,941, Cl. 106-3.000.

Burkert, George M.; Uhland, H. Edward; and Bach, Ricardo O., to First National City Bank, mesne. Lithium alumino silicate composition having low iron content. 3,754,947, Cl. 106-39.00r.

Burley, Harvey A., to General Motors Corporation. Rotary combustion engine ignition. 3,754,534, Cl. 123-529.000.

Burress, George Thomas, to Mobil Oil Corporation. Vapor-phase alkylation in presence of crystalline alumino-silicate catalyst. 3,755,483, Cl. 260-671.00r.

Burrough, Donald E.; and Braunberger, Benjamin A., to Gehl Company. Wheel suspension means for agricultural machine. 3,754,383, Cl. 56-14.400.

Burroughs Corporation: *See*—
Meyer, John A., 3,754,723.
Schifalacque, Italo H., 3,755,727.

Burton, Parsons & Company, Inc.: *See*—
Rankin, Billy F., 3,755,561.

Busby, Brian James; and Hughes, David Alexander, to Imperial Chemical Industries of Australia and New Zealand Limited. Continuous polymerisation process. 3,755,281, Cl. 260-92.80w.

Buschmann, Hans; Mehlhart, Erwin; Pomplun, Emil; and Schwibbe, Alfred, to Nixdorf Computer AG. Electromagnetic drive. 3,755,700, Cl. 310-30.000.

Bush, Richard Paul, to Midland Silicones Limited. Siloxazanes compositions and processes thereof. 3,755,398, Cl. 260-448.20n.

Butler, Gene R., to Sperry Rand Corporation. Positive mechanical drive for the bale separating hooks of a single bale unloading bale wagon. 3,754,668, Cl. 214-8.560.

Butte, Walter A., Jr.: *See*—

Otshi, Masayoshi; and Butte, Walter A., Jr., 3,755,486.

Buzzetta, Frank Vincent: *See*—
Rothman, Julius; Tacconelli, Edmond Andrews; and Buzzetta, Frank Vincent, 3,755,648.

Cabut, Louis Antoine: *See*—
Kienzle, Jean Andre; Huille, Michel Ernest Antoine; and Cabut, Louis Antoine, 3,754,955.

Caldwell, Robert H.; and Pauline, Larry I., to Grizzly Corporation. Chain trencher with shock resistant silent drive. 3,754,341, Cl. 37-86.000.

Calfee, John D., to Monsanto Company. High impact strength in graphite fiber laminates. 3,755,059, Cl. 161-93.000.

California Institute of Technology: *See*—
Yen, Shiao-Ping Siao; and Rembaum, Alan, 3,755,218.

California Microwave, Inc.: *See*—
Leeson, David B., 3,755,758.

Calihan, Lawrence E.: *See*—
Roberts, Dorward T., Jr.; Kay, Edward L.; Calihan, Lawrence E.; and Wakefield, Lynn B., 3,755,489.

Callay, Jean-Jacques: *See*—
Brenneisen, Paul; Callay, Jean-Jacques; and Margot, Alfred, 3,755,406.

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Cangal, Mukund D.: *See*—
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Capetti, Frederico; and Terzuolo, Giancarlo, to Olivetti, Ing., C., & C., S.p.A. Suction device for picking up sheets. 3,754,751, Cl. 271-103.000.

Capital Wire and Cable Company: *See*—
Fountain, Gerald F.; Pringle, John P.; and Lewis, James T., 3,755,112.

Cappiello, Pierre; and Gauberthier, Joseph, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude and Technip Compagnie Francaise d'Etudes et de Constructions. Diphasic fluid distributing device. 3,754,381, Cl. 55-269000.

Carey, John Gerard, to Imperial Chemical Industries, Limited. Manufacture of 1,1-disubstituted-4,4-bipyridylium salts. 3,755,337, Cl. 260-295.000.

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Carlow, Earl F.; and Hepworth, Edward C., to Motorola, Inc. Digital phase shifter/synchronizer and method of shifting. 3,755,748, Cl. 328-155.000.

Carlson, Emery J.: *See*—
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Carmet Company: *See*—
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Carn, Patrick. Appliance for the transport and launching in particular for boats and other applications. 3,754,772, Cl. 280-47.0bb.

Carnahan, Robert D.; and Youtsey, Karl J., to Universal Oil Products Company. Method and means of catalytically converting fluids. 3,754,870, Cl. 23-288.00f.

Carolina Steel and Wire Corporation: *See*—
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Carp, Ralph W.: *See*—
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Carrick, Robert B.; Dormer, Harold K.; and Hudd, Bruce M., to Abitibi Paper Company, Ltd. Wall siding fasteners. 3,754,365, Cl. 52-471.000.

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Carson, John Robert, to McNeil Laboratories, Inc. 5-Cinnamoyl-pyrrole-2-acetic acids and esters. 3,755,307, Cl. 260-240.00j.

Carter, Sidney T.; and Jolda, Lorian J., to A-T-O Inc. Clamping means for container labeling and strip-applying apparatus. 3,754,637, Cl. 198-179.000.

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Carver, Herbert K., Jr.; and Hansen, Omar, Jr., to Dove, J. B., Inc. Smokeless cut-off blade for plastic wrapping film. 3,754,489, Cl. 83-16.000.

Case, Cecil L.; Elder, Robert L.; and Fell, Ferol S., to Hesston Corporation. Mowing, conditioning and windrowing machine. 3,754,384, Cl. 56-14.400.

Casey, Horace Craig, Jr.; and Luther, Lars Christian, to Bell Telephone Laboratories, Incorporated. Diffused junction gap electroluminescent devices. 3,755,006, Cl. 148-33.000.

Cashdollar, Robert E., Sr. Method of making and using a continuous casting chill basket. 3,754,590, Cl. 64-1.000.

Cassagne, Pierre, to Engins Matra. Combined television camera and a television receiver unit. 3,755,623, Cl. 178-7.890.

Cassarino, Aurelio V., to Magsat Corporation. Keyboard clock with timing circuitry for controlling transfer of data between keyboard and processing apparatus. 3,755,691, Cl. 307-208.000.

Castor, William M.: *See*—
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Cecil, Tom A., to Engelhard Minerals & Chemicals Corporation. Preparation of stable suspension of calcined clay. 3,754,712, Cl. 241-16.000.

Celanese Corporation: *See*—
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Chandler, David Horace, to Marconi Company, Limited, The. Method of making printed circuit coil. 3,754,322, Cl. 29-625.000.

Chang, Leo S., to International Business Machines Corporation. Surface for impression development in electrophotography. 3,754,963, Cl. 117-17.500.

Chang, Yun Ger, to Reichhold Chemicals, Inc. Certain peroxy-containing 2-oxo-tetrahydrofurans. 3,755,369, Cl. 260-343.300.

Chang, Yun Ger; and Baily, Philip S., to Reichhold Chemicals, Inc. Organic peroxides and method therefor. 3,755,454, Cl. 260-590.000.

Chang, Yun Ger, to Reichhold Chemicals Inc. Difunctional beta-hydroxy peresters and method of making same. 3,755,465, Cl. 260-610.00d.

Chapin, Jay C., to Ventron Instruments Corporation. Fireproofing composition for cellulosic materials. 3,754,982, Cl. 117-137.000.

Chapin, Leo N., to Dick, A. B., Company. Method for transferring a dye image and electrophotographic copy process embodying same. 3,754,907, Cl. 96-1.400.

Chapman, Leonard A., to Eagle Machine Company, Limited. Tobacco harvester. 3,754,387, Cl. 56-27.500.

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Chimura, Kihachi, to Kabushiki Kaisha Inouye Shokai (Inouye & Co., Ltd.). Nozzle tip of a spray gun of the airless type. 3,754,710, Cl. 239-597.000.

Chinn, Leland J.; and Cusic, John W., to Searle, G. D., & & Co. 6,7-Dihydro-17-hydroxy-3'H-cyclopropa(6,7)-17 α-pregna-4,6-diene-21-carboxylic acids and salts, and pharmaceutical preparations thereof. 3,755,381, Cl. 260-397.100.

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Choate, James Robert, to CPI, Inc. Apparatus for single cavity injection molding of oil seals. 3,754,846, Cl. 425-125.000.

Choate, James Robert, to CPI, Inc. High speed single cavity molding apparatus. 3,754,848, Cl. 425-242.000.

Choulet, Richard Jay: *See—*
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Christiansen, Paal; and Spoelder, Johan. Epoxy bitumen system for road surfacing. 3,755,226, Cl. 260-28.000.

Chrom-Tronics, Inc.: *See—*
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Churbanova, Ira Nikolaevna: *See—*
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Chvatal, Theodor L., to Owens-Illinois, Inc. Oxidic solder sealing compositions and their use in forming laminates. 3,755,065, Cl. 161-192.000.

Ciampa, Fred A.; Serafini, Angelo; and Mazzarella, Louis, to Standard Box Spring Company. Spring assembly and method of manufacture. 3,754,744, Cl. 267-101.000.

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Cier, Harry E., to Esso Research and Engineering Company. Separation of aromatics from hydrocarbon streams. 3,755,155, Cl. 208-331.000.

Cier, Harry E.; and Wilder, Holen L., to Esso Research and Engineering Company. Process for separating momo-chloremethylation and di-chloromethylation produce of a C or lower aromatic hydrocarbon. 3,755,473, Cl. 260-651.00r.

Ciga-Geigy AG: *See—*
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Clark, Frank S.; and Bannister, Loren W., to Monsanto Company. Compositions comprising boron compounds and polyphenyl thioethers. 3,755,175, Cl. 252-78.000.

Clark, Frank S.; and Bannister, Loren W., to Monsanto Company. Compositions comprising boron compounds and polyphenyl thioethers. 3,755,178, Cl. 252-78.000.

Clark, Keith Jasper, to Imperial Chemical Industries Limited. Polyolefin compositions comprising polymerized 4-methyl-pentene-1. 3,755,500, Cl. 260-878.00r.

Clark, Robert L.; and Pessolano, Arsenio A., to Merck & Co., Inc. Imidazolium quaternary salts and methods of preparing the same. 3,755,325, Cl. 260-256.40n.

Clarke, Robert L.: *See—*
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Clay, Burton Ross; and Gore, Douglas Alan, to United States of America, Navy. Holographic readout system employing predispersion. 3,754,808, Cl. 350-3.500.

Clayton, Hadwen A., to Phillips Petroleum Company. Method and apparatus for measuring and controlling the volume of liquid in a vessel. 3,754,560, Cl. 137-2.000.

Cleats Mfg. Inc.: *See—*
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Clonts, Kenyon E., to Merichem Company. Gas-liquid mass transfer process. 3,754,377, Cl. 55-73.000.

Clovis, James S.; and Sullivan, Francis R., to Rohm and Haas Company. Thermally stable polyphosphonates as flame retardants. 3,755,270, Cl. 260-80.00p.

Coatney, Richard L., to Kaiser Aluminum & Chemical Corporation. Periclase refractory grain. 3,754,951, Cl. 106-58.000.

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Cochardt, Philip A.; Cochardt, Alexander R.; and Cochardt, Alexander W., to Community Building Association of Washington, Indiana, Inc., mesne. Utilizing a magnetic field to restrain a ferrite slurry during pressure filtration and particle orientation. 3,75,515, Cl. 264-24.000.

Cogliano, Joseph A., to Grace, W. R., & Co. Method for the preparation of transparent heat shrinkable thermoplastic polymeric film from foamed thermoplastic polymeric material. 3,755,520, Cl. 264-53.000.

Cohn, Seymour B., to Stanford Research Institute. Slot line. 3,755,759, Cl. 333-21.00r.
Cole, Peter Harold; and Vaughan, Richard, to Unisearch Limited. Electronic surveillance system. 3,755,803, Cl. 340-280.000.
Coleman, Aaron H.; and Stewart, Hugh W., to CPS Associates, Inc. Ideographic-language input apparatus publication system utilizing same. 3,754,459, Cl. 95-4.500.
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Cooper, Robert P., to American Hospital Supply Corporation. Incentive spirometer. 3,754,546, Cl. 128-2.080.
Cope, Richard P., Jr., to Stauffer Chemical Company. Novel process for electrodepositing zinc. 3,755,097, Cl. 204-55.00y.
Copstead, Terrance R., to Electronic Data Controls Corporation. Sealing and charging containers with gas. 3,754,369, Cl. 53-22.00r.
Corli, Duncan S.; and Ventre, Charles M., to Polaroid Corporation. Photographic copy system. 3,754,825, Cl. 355-70.000.
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Costanzo, Samuel P., to Gulf & Western Industrial Products Company. Method for necking-in can bodies. 3,754,424, Cl. 72-105.000.
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Crawford, Irvin H.; Democh, Roger E.; and Baron, Robert J., to Eastman Kodak Company. Highly stable resin coated paper products and method of making same. 3,755,069, Cl. 162-135.000.
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George, Ben F., Jr., to Shelly Associates, Inc. Electrical display device and method of making the same. 3,755,663, Cl. 240-10.00r.

George, William Lloyd, and Price, James Brian, to Motorola, Inc. Controlled anistropic etching process for fabricating dielectrically isolated field effect transistor. 3,755,012, Cl. 148-175.000.

Gerbig, Hans Erwin; and von Starck, Axel, to AEG-Elotherm GmbH. Electromagnetic conveyor for molten metal. 3,754,634, Cl. 198-41.000.

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Gilchrist, Ralph E.; and Cox, Jack C., to Tenneco Oil Company. Composition for the control of oils floating on water. 3,755,189, Cl. 252-316.000.

Gilker, Donald J. Shopping cart receiving means. 3,754,630, Cl. 194-4.000.

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Gitchel, Wayne B.; Diddams, Donald G.; and Barr, James W., to Sterling Drug Inc. Aldehyde separation process. 3,755,456, Cl. 260-600.000.

Gitlin, Richard Dennis; Ho, Edmond Yu-Shang; and Mazo, James Emery, to Bell Telephone Laboratories Incorporated. Passband equalizer for phase-modulated data signals. 3,755,738, Cl. 325-42.000.

Giuliani, Robert L. Apparatus for and method of making conductive record cards. 3,755,651, Cl. 235-61.100.

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Glindler, E. Melvin, to Pierce Chemical Company. Micelle-forming protective colloid in colorimetric analysis. 3,754,864, Cl. 23-230.00b.

Glindler, E. Melvin, to Pierce Chemical Company. Colorimetric determination of calcium in biologic fluids. 3,754,865, Cl. 23-230.00b.

Gloor, Walter E., to Hercules Incorporated. Polypropylene compositions containing glass reinforcement. 3,755,245, Cl. 260-41.0ag.

Gloviak, John A.; and Sakats, Gerald, to S. & C. Electric Company. Sub-surface switch construction for underground electric power distribution. 3,755,637, Cl. 200-168.00g.

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Gogen, Ridvan I. Anti-personnel bullet for riot control. 3,754,509, Cl. 102-92.000.

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Gorke, Ronald R. Sound producing attachment for bicycles. 3,754,350, Cl. 46-175.00r.

Gorner, Hurst; Kohler, Manfred; Limberger, Alois; and Osbeck, Walter, to Kienzle Apparate GmbH. Apparatus for separating and guiding sheet means of different thickness and width. 3,754,753, Cl. 271-34.000.

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Goward, George W.; Boone, Donald H.; and Pettit, Frederick S., to United Aircraft Corporation. High-temperature oxidation-resistant coating alloy. 3,754,903, Cl. 75-171.000.

Grabb, Frederick G.; and Beck, Mark E., to Bendix Corporation, The. Vacuum intensified brake booster system. 3,754,841, Cl. 417-189.000.

Grace, W. R., & Co.: *See*—
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Greene, George. Decorative belt links. 3,754,285, Cl. 2-336.000.

Greenlay, John Edwin; Pulling, Bruce Denis William; and Morton, Arthur Francis, to Northern Electric Company, Limited. Device for exposing small rollable bodies to sputtering. 3,755,133, Cl. 204-298.000.

Greenlee, Thomas W., to Dow Corning Corporation. Method of adhering silicone rubber to metal surfaces using salts. 3,754,967, Cl. 117-49.000.

Greenlee, Thomas W., to Dow Corning Corporation. Method of adhering room temperature vulcanizable silicone rubber to metal surfaces. 3,754,969, Cl. 117-49.000.

Greenspan, Myron, to Patented Technology Company. Apparatus for automatically synchronizing the operation of a device to correspond with its movement along a predetermined route. 3,755,818, Cl. 434-228.000.

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Griest, Andrew J., Jr., to International Business Machines Corporation. Cobalt-platinum group alloys whose anisotropy is greater than their demagnetizable field for use as cylindrical memory elements. 3,755,796, Cl. 340-174.0na.

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Grimes, Eldon L., to Marine Construction & Design Co. Apparatus for extracting viscera from fish. 3,754,301, Cl. 17-58.000.

Grindle, James L., to General Electric Company. Floodlight. 3,755,665, Cl. 240-41.550.

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Grotheer, Morris P.; and Cook, Edward H., Jr., to Hooker Chemical Corporation. Conditioning diaphragms in chloro-alkali cells. 3,755,103, Cl. 204-98.000.

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Gruber, Hermann; and Weber, Horst, to Bayer Aktiengesellschaft. Dense polyurethane compounds which contain zeolite having a pure size of 3 A. 3,755,222, Cl. 260-18.0tn.

Gruber, Wolfgang: *See—*
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Gubler, Kurt, to Ciba-Geigy Corporation. Synergistic insecticidal composition of diazinon and a certain carbomate. 3,755,564, Cl. 424-200.000.

Guenther, Karl R., to Bjorksten Research Laboratories, Inc. Carbon dioxide sensing system. 3,754,867, Cl. 23-254.00r.

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Guild, Lloyd V., to Scientific Kit Corporation, Inc. Chemical analysis. 3,754,434, Cl. 73-61.10r.

Guillemont, Roland, to Yechiney-Saint-Gobain. Cyclopentanetetracarboxylic acid. 3,755,431, Cl. 260-514.00k.

Guillot, Jean Claude; Poignant, Pierre; and De Baselarie de Lesseux, Jacques. Herbicidal composition and method employing thiazole derivatives. 3,754,888, Cl. 71-90.000.

Guinosso, Charles J., to American Home Products Corporation. Tris (4-chlorophenoxy) acetic acid and esters thereof. 3,755,417, Cl. 260-473.00g.

Gulbenk, Alin H., to Dow Chemical Company, The. 4-Amino-6-bromo-3,5-dichloropicolinic acid compounds. 3,755,338, Cl. 260-295.00r.

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Gunnell, Thomas J., to Phillips Petroleum Company. Carbon black production. 3,755,544, Cl. 423-456.000.

Guntersdorfer, Max, to Siemens Aktiengesellschaft. Method of making barrier-free semiconductor switching device. 3,754,320, Cl. 29-576.000.

Gustafsson, Nils Gustaf Bonde, to Hyco Hydraulic AB. Throttle valve mechanisms. 3,754,562, Cl. 137-45.000.

Guth, Hans, to Bayer Aktiengesellschaft. Catalytic oxidation of SO_2 to SO_3. 3,755,549, Cl. 423-533.000.

Gutlhuber, Johann; Heitzer, Robert; and Reueder, Ludwig, to Kunststoffwerk Gebruder Anger GmbH. Method for making tubular articles from a thermoplastic material. 3,755,528, Cl. 264-322.000.

Gutman, Arnold D., to Stauffer Chemical Company. Oximinophosphonodithioates. 3,755,425, Cl. 260-502.500.

Gutman, Arnold D., to Stauffer Chemical Company. Phosphoryl cyanodithiomide carbonates. 3,755,506, Cl. 260-940.000.

Gyozo Teriu: *See—*
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Haas, Lee C.; and West, Lynn P., to International Business Machines Corporation. Communication system polling method. 3,755,781, Cl. 340-147.00r.

Haas Lee C.; Larsen, Larry D.; and West, Lynn P., to International Business Machines Corporation. Communication system polling method. 3,755,782, Cl. 340-147.00r.

Habas, Ted C., to General Motors Corporation. Vehicle body compartment panel mounting arrangement. 3,754,614, Cl. 180-69.00c.

Haberkorn, Axel: *See—*
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Hanchett, Loren B., to MWA Company. Segmental grinding wheel. 3,754,355, Cl. 51-209.00r.
Handa, Noritoshi, to Nissan Motor Company Limited. Gas turbine engine combustor. 3,754,393, Cl. 60-39.520.
Haney, John Edwin, to Societe d'Assistance Technique pour Produits Nestle S.A. Application of compressive and frictional forces in preparing dutched cocoa. 3,754,928, Cl. 99-26.000.
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Harrison, Ian T.; and Fried, John H., to Syntex Corporation. Biphenyloxyacetic acids in pharmaceutical compositions. 3,755,603, Cl. 424-317.000.
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Hart, Anthony Christopher, to International Nickel Company, Inc., The. Coating stainless steels. 3,755,117, Cl. 204-140.000.
Hart, Maurice W., Jr. Highly plasticized quivery plastic material with replenishing friction surface and method of producing the same. 3,754,960, Cl. 117-9.000.
Hart, Ronald L.; Emrick, Donald D.; and Bayless, Robert G., to National Cash Register Company, The. Capsule manufacture. 3,755,190, Cl. 252-316.000.
Hart, William J., to Hercules Incorporated. Polyolefin pigment dispersions. 3,755,244, Cl. 260-41.000.
Hartigan, Edward G.; and Zoephel, Richard L., to Kendall Company, mesne. Belt for disposable garment. 3,754,284, Cl. 2-114.000.
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Harvey, Norman L. Digital data storage system. 3,755,792, Cl. 340-173.00r.
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Haught, Alan F.; Polk, Donald H.; Woo, James C.; and Fader, Walter J., to United States of America, Atomic Energy Commission. Hybrid laser plasma target - neutral beam injection fusion system. 3,755,073, Cl. 176-1.000.
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Hederich, Volker; Gehrke, Gunter; and Groll, Manfred, to Bayer Aktiengesellschaft. Process for continuous dyeing polyester fiber material with anthraquinone dyestuff. 3,754,858, Cl. 8-39.000.
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Hegar, Gert; Angliker, Hans-Joerg; and Peter, Richard, to Ciga-Geigy AG. Heterocyclic disazo dyestuffs containing a bridging group and at least one quaternary ammonium group. 3,755,287, Cl. 260-155.000.
Heidorn, John H., to General Motors Corporation. Vacuum actuated clutch. 3,754,626, Cl. 192-38.000.
Heijo, Ichio; Wakamatsu, Sigehiro; Wada, Hideki; and Nagamatsu, Hiroshi, to Mitsubishi Jushi Kabushiki Kaisha. Polyester-high polymer synthetic paper for writing. 3,755,499, Cl. 260-873.000.
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Heinig, Howard G.; and Peterson, Donald W., to General Motors Corporation. Vehicle bumper mounting arrangement. 3,754,784, Cl. 293-99.000.
Heisman, Robert M.; Chase, Charles R.; and Weisenberg, Louis A., to North American Rockwell Corporation. High temperature platens. 3,754,499, Cl. 100-93.00p.
Heitman, Theodore A., to International Harvester Company. Method and means for attaching protection structure to a vehicle frame. 3,754,315, Cl. 29-400.000.
Heitmann, Russell A. Circular saw tensioning method and apparatus. 3,754,485, Cl. 76-112.000.
Heitzer, Robert: *See—*
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Hendrickson, Robert R., to General Motors Corporation. Variable inductance device. 3,755,767, Cl. 336-20.000.

Henegar, Hubert B., to Bendix Corporation, The. System for providing interrupts in a numerical control system. 3,755,787, Cl. 340-172.500.

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Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Halo- or oxy-substituted aliphatic di-olefenic nitriles. 3,755,411, Cl. 260-465.600.

Henricks, John Arthur. Detergent composition containing 1-2 glycol borate water. 3,755,181, Cl. 252-156.000.

Henrie, James O., to North American Rockwell Corporation. Condenser-type gas combiner. 3,755,075, Cl. 176-37.000.

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Herr, Robert W. Surveyor's stake. 3,754,360, Cl. 52-103.000.

Herrendeen, Jerry L.; and Liebing, Phillip E., to Anaconda Wire and Cable Company. Packaging apparatus for strand. 3,754,721, Cl. 242-83.000.

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Hetzel, Max, to Omega Louis Brandt & Freres, S.A. Motion transformer. 3,754,476, Cl. 74-128.000.

Heuner, Robert Charles; and Paradise, Joseph Peter, to RCA Corporation. Monostable/astable multivibrator. 3,755,694, Cl. 307-276.000.

Heusler, Karl; and Fechtig, Bruno, to Ciba Geigy Corporation. Certain 3-monosubstituted-4-thia-2,6-diazabicyclo L3,2,0]heptan-7-ones. 3,755,342, Cl. 260-306.700.

Hewitt, Gordon Trent, to Colgate-Palmolive Company. High lathering conditioning shampoo composition. 3,755,559, Cl. 424-70.000.

Hewitt, Shirley M.; and Masullo, Sal, to Arsald, Inc. Disposable douching apparatus. 3,754,553, Cl. 128-232.000.

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Higbee, Charles D., to Gates Rubber Company, The. Method of making a high pressure hose of a single layer of untwisted textile reinforced rubber. 3,755,032, Cl. 156-86.000.

Hildebrand, William Gene, to Dana Corporation. Lock strap mounting adjustment for clutch adjusting ring. 3,754,628, Cl. 192-111.00b.

Hill, Herbert Hoover. Water control trigger. 3,755,636, Cl. 200-61.050.

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Hitch, Michael John, to Imperial Chemical Industries Limited. Fast cycling polymeric molding composition which contains a particulate nucleating agent an alkylene diamide, and a salt of a mono-carboxlic acid. 3,755,221, Cl. 260-18.00n.

Hitzrot, Henry W., Jr.: *See*—
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Ho, Irving I.; Maley, Gerald A.; and Yo, Hwa N., to International Business Machines Corporation. Latent image memory with single-device cells of two types. 3,755,793, Cl. 340-173.00r.

Hoadlex, Harvey O.; Wolfe, Robert N.; Langworthy, Harold F.; and Depaima, James J., to Eastman Kodak Company. Projection screen. 3,754,811, Cl. 350-127.000.

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Hoehn, Hans; and Denzel, Theodor. Amino derivatives of pyrazolopyridine carboxylic acids and esters. 3,755,340, Cl. 260-295.50b.

Hoermann, Hubert, to Unileit-Bayerische Bitumen-Chemie Ferdinand Heinrich, Firma. Apparatus for producing grooves in surfaces such as road surfaces. 3,754,791, Cl. 299-36.000.

Hofbauer, Peter, to Volkswagenwerk Aktiengesellschaft. Combustion engine with rotary piston arrangement. 3,754,535, Cl. 123-813.000.

Hoffman, Frank A.; Buchanan, Melvin L.; Dunbar, Carl J.; and Sauey, Lawrence K., to Arvin Industries, Inc. Panel and method of making it. 3,755,031, Cl. 156-79.000.

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Hohenberg, Rudolph, to Avco Corporation. Pneumatic shaft speed sensor. 3,754,471, Cl. 73-506.000.

Hohler, Albert, to U.S. Philips Corporation. Arrangement for supervising circuits. 3,755,688, Cl. 307-117.000.

Hoichkiss, Marvin E., to Goodrich, B. F., Company, The. Segmented disc element. 3,754,627, Cl. 192-107.00r.

Hollan, Laszlo, to U.S. Philips Corporation. Liquid solution method of epitaxially depositing a semiconductor compound. 3,755,013, Cl. 148-172.000.

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Holub, Fred F.; and Evans, Milton L., to General Electric Company. Amide acid and imidosubstituted organosilanes. 3,755,354, Cl. 260-326.00e.

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Houlihan, William J., to Sandoz-Wander, Inc. 2,3,4,5-Tetrahydro-7h-[1,3] diazepino [2,1-] isoindoles. 3,755,360, Cl. 260-326.50b.
Houlihan, William J., to Sandoz-Wander, Inc. (1-alkoxy-2 N apthyl)-substituted or unsubstituted phenylketones. 3,755,455, Cl. 260-591.000.
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Howell, Robert B. Presser foot roller with alignment feature. 3,754,519, Cl. 112-235.000.
Hoyle, John; and Reuben, Thomas, to Slack & Parr Limited. Coloration of hot melt polymers. 3,754,734, Cl. 259-4.000.
Hoyle, John; and Griffin, Thomas Reuben, to Slack & Parr Limited. Polymer coloration. 3,754,735, Cl. 259-4.000.
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ICI Australia Limited: *See—*
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Iddings, Lloyd A., to United States of America, Navy. Controllable precession gyroscope. 3,754,475, Cl. 74-5.460.
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Inaba, Kohsaku; Ohga, Toshiro; Ozono, Teturo; and Yoshida, Setsaku, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Truck-mounted hole digger and pile driver. 3,754,604, Cl. 173-28.000.

Inamine, Shigeo: *See—*
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Ingersoll-Rand Company: *See—*
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Inoue, Eiichi: *See—*
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Institut po Technicheska Kibernetika pri Ban: *See—*
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Iwasaki, Iwao, to University of Minnesota, The Regents of the. Process for recovering nickel from very low grade primary nickel ores. 3,754,896, Cl. 75-82.000.

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Jahnig, Charles E.; Savage, David W.; and Horowitz, Hugh H., to Esso Research and Engineering Company. Olefin complexing process. 3,755,487, Cl. 260-677.00a.

Jakacki, Wallace B., to Barlow Corporation. Sealed underground wiring test station. 3,755,614, Cl. 174-59.000.

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Jamiak, Stefan, to Ciba-Geigy AG. Combatting phytopathogenic bacteria and fungi with n-phenyquinozolones. 3,755,581, Cl. 424-251.000.

Jamieson, Allan Geoffrey, to Canadian Industries, Limited. Oxygen bleaching. 3,754,417, Cl. 68-15.000.

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Johnson, Edward B. Silver recovery from photographic wastes. 3,754,743, Cl. 266-24.000.
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Johnson, Marvin M.; and Nowack, Gerhard P., to Phillips Petroleum Company. Selective absorption and hydrogenation of acetylenes. 3,755,488, Cl. 260-677.00a.
Johnson, Paul, to A.P.C. Industries, Inc. Apparatus for simultaneously joining and testing conductors. 3,755,632, Cl. 179-175.300.
Johnson, Robert F., to Phillips Petroleum Company. Producing a dyed propylene polymeric fabric by incorporating a plurality of fibers containing dye receptors therein. 3,754,856, Cl. 8-15.000.
Johnson, Walter P. Liquid level sensing system and apparatus. 3,755,804, Cl. 340-244.00c.
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Jones, Viron V., to Keuffel & Esser Company. Photoimaging method comprising crosslinking alkoxy methyl polyamides. 3,754,911, Cl. 96-35.100.
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Katchka, Jay R.: *See—*
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Katsobashvili, Jakov Rafailovich; and Belova, Galina Mikhailovna, to Institute Neftekhimivhrdkoho Sinteza Imeni A.V. Method for reactivation of oxide catalysts. 3,755,202, Cl. 252-417.000.
Kauffman, Harry D., to Cincinnati Milacron Inc. Maximum average gap voltage control for EDM power supply. 3,755,645, Cl. 219-69.00c.
Kaufman, Harold B., Jr.; Stein, Ernest W.; and Schiffmann, Robert F., to DCA Food Industries, Inc. Control system. 3,754,464, Cl. 99-334.000.
Kaufman, Irving. Lemon slice squeezer. 3,754,502, Cl. 100-133.000.
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Kautz, Kurt; and Stahnke, Otto, to Molkereigenossenschaft Dahlenburg EGmbH. Method for the dialysis of milk, and more particularly method for producing albumin from milk and whey, and apparatus for carrying out this method. 3,754,650, Cl. 210-152.000.
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Kienzle Apparate GmbH: *See*—
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Kienzle, Jean Andre; Huille, Michel Ernest Antoine; and Cabut, Louis Antoine. Phthalocyanines. 3,754,955, Cl. 106-288.00q.

Kiikka, Lauri W.; and Hartman, Ronald L., to Eastman Kodak Corporation. Apparatus for improving adhesion of gelatinols and other coatings to oriented and unoriented polymeric film. 3,755,683, Cl. 250-542.000.

Kikkoman Shoyu Co., Ltd.: *See*—
Toei, Ryozo; Aonuma, Tatsuo; Watanabe, Hiroharu; and Yuasa, Toshizumi, 3,754,930.

Kikuchi, Shinki: *See*—
Sato, Masao; Aizawa, Tsuneo; Ohnishi, Kenji; Kuizumi, Shigeo; Fukada, Akio; Kikuchi, Shinki; and Kusanagi, Schichiro, 3,754,490.

Kikugawa, Kiyomi: *See*—
Kanai, Tadashi; Kikugawa, Kiyomi; Asakura, Saeko; Maruyama, Osamu; Ichino, Motonobu; and Nakamura, Tokuro, 3,755,296.

Kilroy, Oliver B. Interlocked pallet and container system. 3,754,645, Cl. 206-65.00b.

Kim, Chung K., to Raytheon Company. Back-to-back semiconductor high frequency device. 3,755,752, Cl. 330-34.00r.

Kimberly-Clark Corporation: *See*—
Stumpf, Robert J., 3,755,051.

Kimura, Hiroshi; Sato, Shigehiko; Nakagawa, Tstuo; Nakatani, Hiromi; Matsukura, Akihiko; Suzuki, Takashi; Asai, Mitsuko; Kanamaru, Tsuneo; Shibata, Motoo; and Yamatodani, Saburo, to Takeda Chemical Industries, Ltd. Thermo-gelable polysaccharide-containing oodstuffs. 3,754,925, Cl. 99-1.000.

King, Kenneth L. Ski binding. 3,754,769, Cl. 250-11.35t.

King, William R., to Sandoz-Wander, Inc. Flexible nasal camera. 3,754,552, Cl. 128-206.000.

Kinney, Robert E.; Coty, Vernon F.; and Williams, Albert L., to Mobil Oil Corporation. Sulfur-containing carboxylic acids as corrosion inhibitors. 3,755,176, Cl. 252-48.600.

Kinsel, Tracy Stewart, to Bell Telephone Laboratories, Incorporated. Spacially multiplexed optical beam communication system. 3,755,676, Cl. 250-199.000.

Kinser, Robert W., to New Products Corporation. Internal combustion engine exhaust catalytic reactor, with electrical charge means. 3,755,120, Cl. 204-164.000.

Kinzel, Walter: *See*—
Wagner, Gerhard; and Kinzel, Walter, 3,754,293.

Kipling, Barry John, to Pye Limited. Cyclically operated medical respirators. 3,754,550, Cl. 128-145.800.

Kippe, Dieter: *See*—
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Kirby, Harry Ashley: *See*—
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Kirilishin, Vsevolod Petrovich; and Khitarov, Nikolai Ivanovich. Method of obtaining chemical resistant concrete. 3,754,952, Cl. 106-84.000.

Kirk, Robert T., to Eaton Corporation, mesne. Multiplexer. 3,755,785, Cl. 340-172.500.

Kirkpatrick, Paul A.: *See*—
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Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, to Bayer Aktiengesellschaft. S,S-di(2-alkoxy-ethyl) phosphoro- or phosphono-TH ionidithiolates. 3,755,508, Cl. 260-950.000.

Kitashima, Shin-Ichi: *See*—
Nagaoka, Joji; Yamashita, Kazuhiko; Kitashima, Shin-Ichi; and Fukuma, Kenichiro, 3,755,289.

Klayum, Milton A.; and Greischar, Richard A., to Reliable Electric Company. Line protector having arrester and fail-safe circuit bypassing the arrester. 3,755,715, Cl. 317-62.000.

Kleinknechi, Hans Peter; and Uberholzer, Alfred Heinrich, to RCA Corporation. Method for depositing an epitaxial semiconductive layer from the liquid phase. 3,755,011, Cl. 148-171.000.

Kleinschmager, Herbert, to Brown, Boveri & Cie AG. High temperature fuel cell. 3,754,995, Cl. 136-86.00r.

Klemann, Lawrence P.; Whitney, Thomas A.; and Langer, Arthur W., Jr., to Esso Research and Engineering Company. Polyalkylene polyamine separation and purification. 3,755,447, Cl. 260-563.000.

Kline, John H. Automobile tire clamp that provides free hose movement around a car. 3,754,305, Cl. 24-256.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
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Wagner, Gerhard; and Kinzel, Walter, 3,754,293.

Klug, Eugene D., to Hercules Incorporated. Gelled fuel compositions. 3,754,877, Cl. 44-7.00b.

Kmety, Andrew, to Koppers Company, Inc. Machine spotting device. 3,754,512, Cl. 104-249.000.

Knabel, Horst; Saemann, Lothar; and Baumgarten, Manfred, to Aviatest GmbH. Torque loading device. 3,754,437, Cl. 73-99.000.

Knapsack Aktiengesellschaft: *See*—
Broll, Richard; and Heymer, Gero, 3,755,163.
Queck, Robert; and Werner, Hugo, 3,755,611.
Staendeke, Horst, 3,755,460.

Knerr, William R. Guard for power chain saw. 3,754,328, Cl. 30-382.000.

Kniese, Wilhelm; Nienburg, Hans Juergen; Plueckhan, Juergen; Himmell, Walter; and Aquila, Werner, to Badische Anilin- & Soda Fabrik Aktiengesellschaft. Recovery of rhodium fixed to basic ion exchangers in the form of rhodium carbonylate. 3,755,393, Cl. 260429.00r.

Knipe, Leonard E.; and Furra, Carl D., to Continental Can Company, Inc. Closed loop motor control lid condition responsive system. 3,755,726, Cl. 318-563.000.

Knopp, Walter V., to Johnson, A., & Co., Inc. Exothermic structuring of aluminum. 3,754,905, Cl. 75-227.000.

Knothe, Erich Emil Karl; and Melcher, Franz-Josef, to Sartorius-Werke GmbH. Counterweight addition and removal devices for use with balances. 3,754,611, Cl. 177-235.000.

Kobayashi, Norio: *See*—
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Kobayashi, Yogoro; and Yamagami, Tsutomu, to Ricoh Co., Ltd. Device for automatically correcting the position of an original in an automatic copying machine. 3,754,826, Cl. 355-109.000.

Kobori, Toshio: *See*—
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Koch, Harold H. Watch band display package. 3,754,641, Cl. 206-45.340.

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Kohl, Karl. Needle bar drive for warp knitting machine. 3,754,415, Cl. 66-86.000.
Kohler, Manfred: *See—*
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Kohn, Edward M., to Sun Oil Company of Pennsylvania. Process for desulfurizing petroleum resins. 3,755,149, Cl. 208-209.000.
Kohn, Gustave K.: *See—*
Brown, Blancthon Starr, 3,755,437.
Brown, Melancihon S., 3,755,507.
Koizumi, Shun; Suzuki, Takeshi; and Okuno, Chuzo, to Daikin Kogyo Kabushiki Kaisha. Coating compositions. 3,755,496, Cl. 260-836.000.
Kolin, Alexander; and Luner, Stephen Jay, to University of California, The Regents of the. Fluid belt electrophoresis apparatus. 3,755,132, Cl. 204-299.000.
Kolle, Erwin: *See—*
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Koller, Heinz: *See—*
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Komorek, Felix A. Ring compressor. 3,754,312, Cl. 29-200.00p.
Koninklijke Fabriek Inventuor Fabriek voor Machines en Elektrische Apparaten N.V.: *See—*
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Kontes Glass Company: *See—*
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Kooi, Else: *See—*
Appels, Johannes Arnoldus; Paffen, Maria Magdalena Mathilda; Kooi, Else; and Simons, Johannes Philippus Gerardus, 3,755,014.
Kooi, Else; and Appels, Johannes Arnoldus, to U.S. Philips Corporation. Method of making semiconductor devices w th selective doping and selective oxidation. 3,755,001, Cl. 148-1.500.
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Zeile, Karl; Engelhardt, Albrecht; and Traunecker, Werner, to Boehringer Ingelhelm G.m.b.H. 1-cyanophenoxy-2-hydroxy-3-(cycloalkyl-amino)-propanes. 3,755,413, Cl. 260-465.00e.
Koppers Company, Inc.: *See—*
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Kotkins, Henry L., to Skyway Luggage Company. Telescoping hanger brackets. 3,754,664, Cl. 211-94.000.
Kotras, William A., to General Motors Corporation. Vehicle operation inhibitor control system. 3,755,776, Cl. 340-53.000.
Kraft, Hans-Gunther: *See—*
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Kratzer, Dale L., to All Systems. Radio navigation system. 3,755,816, Cl. 343-112.00p.
Krausbar, Helmuth: *See—*
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Krause, Gerhard: *See—*
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Krauss, Edward William, to IPEC, Incorporated. Sheet cutting apparatus. 3,754,492, Cl. 83-380.000.
Krehbiel, John H., Sr.; and Krafthefer, Kerry M., to Molex Products Company. Solder resist. 3,754,324, Cl. 29-630.00d.
Kreutter, Richard C., to Clark Equipment Company. Pallet storage system. 3,754,632, Cl. 198-20.000.
Krick, John B.; and Coleman, Bernard, to Rowan Controller Inc. Solid state motor control cycling timer. 3,755,695, Cl. 307-293.000.
Krochert, Karl-Heinz, to Roland Offsetmaschinenfabriken Faber & Schleicher AG. Device for registering sheets on feed board of sheet fed printing machines. 3,754,755, Cl. 271-58.000.
Kroll, Hartmut: *See—*
Stoll, Wolfgang; and Kroll, Hartmut, 3,755,513.
Kruesi, Paul R. Process for the recovery of molybdenum and rhenium from sulfide by electrolytic dissolution. 3,755,104, Cl. 204-94.000.
Kryczun, Alfred; and Manshausen, Theo, to Klockner-Humboldt-Deutz Aktiengesellschaft. Kiln with overlying beds for drying, burning and sintering of granular and/or sludge-type material. 3,754,742, Cl. 432-95.000.
Krynski, John E.; Smith, William C.; and Anderson, Kenneth A., to Ametek, Inc. Sluice means and rotatable nozzles. 3,754,659, Cl. 210-334.000.
Kubo, Junichi: *See—*
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Kuchta, August Dennis, to Du Pont de Nemours, E. I., and Company. Photopolymerizable elements of low optical density containing thickeners with discrete, orderly orientation. 3,754,920, Cl. 96-87.00r.
Kudamatsu, Akio: *See—*
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Kuhnen, Fred, to Sandoz Ltd. (a/k/a) Sandoz AG. 2-Dialkylamino-1,3-bis-(alkoxyalkylthic propanes. 3,755,424, Cl. 260-501.190.
Kuizumi, Shigeo: *See—*
Sato, Masao; Aizawa, Tsuneo; Ohnishi, Kenji; Kuizumi, Shigeo; Fukada, Akio; Kikuchi, Shinki; and Kusanagi, Schichiro, 3,754,490.
Kullman, Russell M. H.; Frick, John G., Jr.; and Reinhardt, Robert M., to United States of America, Agriculture. Finishing agents with reduced formaldehyde odor for cellulose containing textile materials. 3,755,418, Cl. 260-482.00c.
Kummer, Werner: *See—*
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Kunz, Frydbryk. Scanning finger for electromechanical punch card scanner. 3,755,657, Cl. 235-61.11c.
Kuramoto, Yoshio: *See—*
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Kurtz, Abraham N.; Farmer, Melvin L.; and Atkins, Kenneth E., to Union Carbide Corporation. Exchange reactions of octadienyl esters with active hydrogen compounds. 3,755,451, Cl. 260-593.00r.
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Kutolin, Sergei Alexeevich; Vulikh, Alexandr Ilich; and Shammasova, Anna Egorovna. Method of producing salts of alkaline earth metals. 3,755,553, Cl. 423-598.000.
Kuttner, Werner, to Siemens Aktiengesellschaft. Circuit for the charging of batteries. 3,755,729, Cl. 320-20.000.
Kvasnikoff, Georges; Pfister, Alain; and Vecchiutti, Robert, to Societe Anonyme dite: Societe National des Petroles d'Aquitaine. Process for the production of organic disulphides. 3,755,461, Cl. 260-608.000.
Kyker, Gary Stephen: *See—*
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Laatsch, Kurt A., to Battieger, Joseph R. Hose nozzle with discharge control. 3,754,709, Cl. 239-530.000.
Labofina S. A.: *See—*
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Laboratorium fur Adsorptionstichnik GmbH: *See—*
Wisfeld, Werner; Wirth, Hans; and Lotz, Walter, 3,755,157.
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Lailach, Gunter; Rodi, Fritz; Bade, Heribert; and Koller, Heinz, to Bayer Aktiengesellschaft. Preparation of iron oxide and hydrated iron oxide pigments. 3,755,554, Cl. 423-633.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
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Langenhoff, Ferdinand; Termin, Erich; Lenz, Arnold; and Schinke, Georg. Process for the manufacturing of vanadium chlorides. 3,755,547, Cl. 423-472.000.
Langer, Arthur W., Jr.: *See—*
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Langer, Arthur W., Jr.; and Haynes, Raymond R., to Esso Research and Engineering Company. Copolymerization of alpha olefins with sterically hindered alkenyl amines using ziegler catalysts. 3,755,279, Cl. 260-88.1pn.
Langer, Arthur W., Jr., to Esso Research and Engineering Company. Process for making synthetic waxes. 3,755,484, Cl. 260-671.00b.
Langer, Arthur W., Jr.; and Whitney, Thomas A., to Esso Research and Engineering Company. Separation and recovery of inorganic lithium salts from other metal salts. 3,755,533, Cl. 423-181.000.
Langer, Sidney, to Gulf Oil Corporation. Method for separating particles. 3,755,074, Cl. 176-16.000.
Langworthy, Harold F.: *See—*
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Hoadlex, Harvey O.; Wolfe, Robert N.; Langworthy, Harold F.; and Depaima, James J., 3,754,811.
Lankheet, Jay A., to Glamour Pools by Aztec. Method of spraying glass fiber and resins onto substrate which eliminates necessity of rolling. 3,754,977, Cl. 117-105.500.
Lannoch, Rudolf. Filter. 3,754,651, Cl. 210-106.000.
Laos, Ivar: *See—*
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Leary, Robert E.: *See—*
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Lee, James Tri, to RCA Corporation. Coupling circuit. 3,755,693, Cl. 307-237.000.
Lee, John W.: *See—*
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Lee, Joseph K. Ignition code override device. 3,755,777, Cl. 340-64.000.
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Lee Pharmaceuticals, mesne: *See—*
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Leighty, Allen J. Portable anchor unit. 3,754,525, Cl. 114-206.000.
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Leloux, Arnoldus Willem, to Industriele Onderneming Wivin N.V. Device for removing two thin layers situated on each other. 3,755,049, Cl. 156-584.000.
Lenahan, John J. Indexing means and book for organized hierarchical subject matter. 3,754,778, Cl. 283-38.000.
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Lerner, Leonard J., to Squibb, E. R., & Sons, Inc. Pharmaceutical compositions. 3,755,575, Cl. 424-240.000.
Letosky, Vincent H., to General Motors Corporation. Circuit for producing an output signal pulse of a width equal to the period between separated input signal pulse pairs. 3,755,747, Cl. 328-133.000.
Leutenegger, Willi: *See—*
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Levine, Eli; and Singer, Robert F., to Celanese Corporation. Etherified crotonylidenediurea resins in emulsion textile printpastes. 3,755,228, Cl. 260-29.4ua.
Levine, Seymour D., to Squibb, E. R., & Sons, Inc. Acenaphthyl amides and amines. 3,755,442, Cl. 260-558.00p.
Levitron Manufacturing Co., Inc.: *See—*
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McFarland, James W.; and Ray, Verne A., to Pfizer Inc. Thiazoline and 5,6-dihydro-4h-1,2-thiazine antiviral agents. 3,755,578, Cl. 424-246.000.

McGahee, Welbourne D. Fishing hooks, sinkers, and lure apparatus. 3,754,347, Cl. 43-44.830.

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Meyers, Robert E., to Bendix Corporation, The. Spring brake control valve. 3,754,793, Cl. 303-13.000.

Michaels, Edwin B.; and Lee, John W. Process for preparing polyhalo phenols. 3,755,470, Cl. 260-623.00r.

Mickelson, Grant A., to Union Oil Company of California. Hydrocarbon conversion processes and catalysts for use therein. 3,755,147, Cl. 208-112.000.

Mickelson, Grant A., to Union Oil Company of California. Hydrogenative desulfurization. 3,755,150, Cl. 208-216.000.

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Miller, Norman C. Method of preventing the spread of and extinguishing fires. 3,754,600, Cl. 169-1.00a.

Miller, Peter B. Lock apparatus. 3,754,418, Cl. 70-1.00b.

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Miller, Roy E.; and Miller, Robert F. Work piece sensor and tape cutoff for sewing machines. 3,754,522, Cl. 112-219.00b.

Miller, Russell C., to J. M. Eltgroth & Associates, Inc. Composition and process for inhibiting corrosion of non-ferrous metal surfaced articles and providing receptive surface for synthetic resin. 3,755,018, Cl. 148-6.210.

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Mirviss, Stanley B.; and Greco, Carl C., to Stauffer Chemical Company. Hydroxy benzoic thiolanhydrides. 3,755,441, Cl. 260-545.00r.
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Moore, Earl P., Jr., to Du Pont de Nemours, E. I., and Company. Refractory laminate based on negative sols or silicates and non-polymeric organic cationic nitrogen-containing compounds. 3,754,946, Cl. 106-38.350.
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Opp, Karl; Wygasch, Ewald; and Csizi, Gotthard, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Electrolysis of alkali metal chlorides. 3,755,109, Cl. 204-99.000.

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Rossi, Louis J., to Eastman Kodak Company. Substituted bis(p-dialkylaminophenyl) methane photoconductors. 3,755,310, Cl. 260-240.900.

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Roth, Charles A.; and Speier, John L., to Dow Corning Corporation. Silylating agent. 3,755,397, Cl. 260-448.20n.

Rothert, Manfred: *See—*
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Rowan Controller Inc.: *See—*
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Ruble, Frank D.: *See—*
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Rusbach, Maurice, to Sarmac S.A. Assembly comprising a self-propelled finned projectile and its case. 3,754,726, Cl. 244-3.280.

Russ, Malcolm J.; and Coats, Edwin, to Motorola, Inc. Diffusion process for compound semiconductors. 3,755,016, Cl. 148-189.000.

Russell, Alexander, to National Research Development Corporation. Machine position detection and control devices. 3,755,682, Cl. 250-231.00r.

Ryan, Herbert Alan; and Friedmann, Charles Aubrey, to Westminister Laboratories, Limited. Pharmaceutical compositions containing lithium rheinanthrone and lithium rheinanthrone complex salt. 3,755,602, Cl. 424-317.000.

Ryan, Michael W. Artificial foot having ankle flexible mount. 3,754,286, Cl. 3-32.000.

Rydh, Thore Oskar Verner, to Astra Lakemedd Aktiebolag. Salts of l-ephedrine and A D (-)-α-azidofluoro-phenylacetic acid. 3,755,373, Cl. 260-349.000.

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Saccomano, Joseph Michael; Ellis, John Douglas, Jr.; Choulet, Richard Jay; and Death, Frank Stuart, to Joslyn Mfg., and Supply Co. and Union Carbide Corporation. Nitrogen control in argon-oxygen refining of molten metal. 3,754,894, Cl. 99-106.000.

Sachar, Kenneth S.: *See—*
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Saemann, Lothar: *See—*
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Saenger, Hans-Heinrich: *See—*
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Sanctuary, Clifford; and Woods, Donald C., to Del Mar Engineering Laboratories. Rotatable mirror angular position electronic measuring system for activating a digital display. 3,754,815, Cl. 350-285.000.

Sanders Associates, Inc.: *See—*
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Sanders, Jon: *See—*
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Sanders, Mildred P. Device for making ornamental design. 3,754,692, Cl. 223-46.000.

Sanders, Robert K.; Marlow, Jerry R.; Dornfeld, Kenneth A.; and Nelson, Robert E., to General Motors Corporation. Method and apparatus for controlling torque capacity in torque transmitting devices. 3,754,482, Cl. 74-752.00a.

Sanders, Robert N.: *See—*
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Sandoz Ltd. (a/k/a) Sandoz AG: *See—*
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Sanzari, Neil P.; and Emele, Jane F., to Warner-Lambert Company. Anti-tussive compositions containing piperidine derivatives. 3,755,586, Cl. 424-267.000.

Sapir, Said, to International Telephone and Telegraph Corporation. Noise discrimination apparatus. 3,755,745, Cl. 328-133.000.

Saponara, Domenick, to International Telephone and Telegraph Corporation. Control apparatus. 3,754,703, Cl. 236-15.00a.

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Sasaki, Kizo, to Pioneer Electronic Corporation. Speaker system. 3,754,618, Cl. 181-31.00b.

Sasayama, Takao, to Hitachi, Ltd. Ignition system for internal combustion engine. 3,754,541, Cl. 123-148.00e.

Sather, Delaine C., to Collins Radio Company. Digital word magnitude selection circuit apparatus. 3,755,660, Cl. 235-177.000.

Sato, Masao; Aizawa, Tsuneo; Ohnishi, Kenji; Kuizumi, Shigeo; Fukada, Akio; Kikuchi, Shinki; and Kusanagi, Schichiro, to Amada Company Limited. Horizontal band saw machine. 3,754,490, Cl. 83-168.000.

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Sawada, Hidekazu: *See—*
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Saxton, Richard F. Hardness testing apparatus. 3,754,436, Cl. 73-81.000.
Sbragia, Ronald J.: *See—*
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Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., to United States of America, Interior. Electrolytic oxidation of Sb_2S_3. 3,755,106, Cl. 204-96.000.
Schenck, Carl, Maschinenfabrik GmbH, Firma: *See—*
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Scheuermann, Horst; and Hell, Peter-Matthias, to Badische Anilen & Soda-Fabrik Aktiengesellschaft. Optical brighteners of the bisstyrylbenzene series. 3,755,446, Cl. 260-559.00a.
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Schindler, Walter; deceased (by Blattner, Hans; and Gysin, Leonard; legal representatives), to Ciba-Geigy Corporation. 2,3-Dihydro-5-trifluoromethyl-lh-dibenzo (2,3:6,7) thiepino (4,5-C)pyrolles as CNS-depressants. 3,755,357, Cl. 260-326.900.
Schinke, Georg: *See—*
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Schnabel, Adolph, to Johns-Manville Corporation. Asbestos fiber extended phenolic adhesives. 3,755,067, Cl. 161-262.000.
Schneider, John A.; and Mills, Jack F., to Dow Chemical Company, The. Bromination of organic compounds with a bromine chloride-dioxane complex. 3,755,444, Cl. 260-559.00s.
Schnell, Hermann: *See—*
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Schorre, Gustav; and Nowak, Herbert, to Merck Patent Gesellschaft mit beschrankter Haftung. Sulfur-containing derivatives of 2-methyl-4-hydroxymethyl-5-methylene-pyridine. 3,755,336, Cl. 260-294.80g.
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Schrader, Gerhard; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating ascarids and insects with amido-thiono-phosphoric acid phenyl esters. 3,755,572, Cl. 424-212.000.
Schrage, Albert E.; and Readio, Philip D. Particle process for reacting an olefin polymer with a polymerizable compound. 3,755,495, Cl. 260-827.000.
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Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system for a fuel burning apparatus or the like. 3,754,572, Cl. 137-675.660.
Scott, Howard L. Synthetic fur. 3,755,057, Cl. 161-67.000.
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Seiwert, Paul J., to MacLeon Company. Drum type washer for metal borings and the like. 3,754,559, Cl. 134-65.000.

Seki, Toshio, to Nitto Kasei Co., Ltd. Dihydrocarbyl (phenolato) tin carboxylates. 3,755,392, Cl. 260-429.700.

Sekimoto, Tadahiro, to Communications Satellite Corporation. PCM-TV system using a unique word for horizontal time synchronization. 3,755,624, Cl. 178-69.5tv.

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Senecal, Eugene G., to TAC Industries, Inc., mesne. Machine processed data card. 3,755,655, Cl. 235-61.12r.

Senkbeil, Herman O.; and Osborne, D. Wendell, to Dow Chemical Company, The. O,O-Dialkyl S(2-[3-(substituted) ureido] ethyl) phosphorodithioates. 3,755,505, Cl. 260-938.000.

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Serratto, Angelo. Device for the automatic proportional control of physical quantities in a hydraulic circuit. 3,754,595, Cl. 165-36.000.

Seumatsu, Yasuo, to Shinto Paint Co., Ltd. Method for the anodization and resin-coating of aluminous articles. 3,755,093, Cl. 204-37.00r.

Seuret, Marcel; and Leutenegger, Willi, Leutnegger assor. to Ciba-Geigy Corporation. Process for the continuous optical brightening of acylated cellulose fibre material. 3,754,964, Cl. 117-33.50t.

Seyb, Edgar J.; Kalt, Melvyn B.; and Chessin, Hyman, to M & T Chemicals Inc. Anode compositions. 3,755,094, Cl. 204-51.000.

Shagoury, Paul B. Bag holder. 3,754,771, Cl. 280-36.00c.

Shalit, Harold, to Atlantic Richfield Company. Apparatus for electrolytic purification of hydrogen. 3,755,131, Cl. 204-246.000.

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Shaw, Jeffery Isaac, to Lucas, Joseph, (Industries) Limited. Wiring arrangement. 3,755,717, Cl. 317-101.00f.

Shaw, Manuel; and Perkins, Wayne E., to Environmetrics Inc. Electrochemical gas analyzer. 3,755,125, Cl. 204-195.00p.

Shaw, Philip E.; Daum, Sol J.; and Clarke, Robert L., to Sterling Drug Inc. Polyhydrophenanthrene derivatives. 3,755,361, Cl. 260-327.000.

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Shepherd, Charles F. Commode hinge. 3,754,300, Cl. 16-150.000.

Shepherd, Lawrence H., Jr., to Ethyl Corporation. Synthesis of cyclic aluminum compounds. 3,755,400, Cl. 260-448.00a.

Sheppard, Chester Stephen; and MacLeay, Ronald Edward, to Pennwalt Corporation. 4,4-Alkylene bis(semicarbazide) and derivatives thereof. 3,755,288, Cl. 260-174.000.

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Sheridan, David S.; and Jackson, Isaac S., to Sheridan, David S., mesne. Method of making multiple lumen tubing for medics-surgical tubes. 3,755,525, Cl. 264-167.000.

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Shimanckas, William J., to Outboard Marine Corporation. Variably ventilated propeller. 3,754,837, Cl. 416-93.000.

Shimizu, Isamu: *See*—
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Shimosaka, Yukio; Ueda, Sumimichi; and Nakajima, Shigeru, to Japan Exlan Company Limited. Polypivalolactone composition with improved thermostability. 3,755,248, Cl. 260-45.80n.

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Shirato, Shiro; Nagatsu, Junsaku; Shibuya, Mitsuo; and Kusakabe, Yoko, to Kaken Kagaku Kabushiki Kaisha. Antibiotic minimycin. 3,755,293, Cl. 260-209.00r.

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Smith, Bian Turton; Clegg, Trevor Edwin; and Stevens, John, to Westinghouse Brake and Signal Company, Limited. Wheel balancing apparatus. 3,754,447, Cl. 73-457.000.

Smith, Burton H., to Raytheon Company. Broadband solid state amplifier. 3,755,753, Cl. 330-53.000.

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Snyder, Gilbert R., to United States of America, Army. Ductile ampule deferred action battery. 3,754,996, Cl. 136-90.000.

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Sobel, Jay E., to Universal Oil Products Company. Hydrocarbon alkylation process. 3,755,485, Cl. 260-671.00r.

Sobel, Johannes; Nittel, Fritz; Himmelmann, Wolfgang; and Pelz, Willibald, to Agfa-Gevaert Aktiengesellschaft. Photographic layers which contain UV-absorbers. 3,754,919, Cl. 96-84.00r.

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Societe d'Exploitation de Brevets pour l'Industrie La Marine Societe Anonyme: *See—*
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Soper, Quentin F. 2,6-Bis(trifluoromethyl)-4-nitrobenzimidazole. 3,755,346, Cl. 260-309.200.

Sordello, Frank J.; and Ruble, Frank D., to Information Storage Systems, Inc. Arrival detection and data transfer control system for data. 3,755,795, Cl. 340-174.10c.

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Spiller, Lester L., to Ransburg Electro-Coating Corporation. Deposition materials and method. 3,754,975, Cl. 117-93.40r.

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Statham, Louis D.; and Eisele, Walter H., to Statham Instruments, Inc. Film dryer. 3,754,736, Cl. 259-18.000.

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Stefanescu, Constantin; Vartolomei, Ion; Urziceanu, Gheorghe; and Badea, Gheorghe, to Combinatul Chimic Craiova. Unreduced catalyst for ammonia synthesis and process for its manufacture. 3,755,199, Cl. 252-455.00r.

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Stover, Harris A., to Collins Radio Company. Self-monitoring of radio receivers. 3,755,741, Cl. 325-363.000.

Stratenus, Jan L., to Shell Oil Company. Process for adding cadmium to supported nobel metal dehydrogenation catalyst. 3,755,198, Cl. 252-466.0pt.

Straub, Melvin J.; and Schuftte, Thomas L., to Possis Corporation. Method for applying extruded plastic films to substrates. 3,755,523, Cl. 264-90.000.

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Taylor, James L., to Sargent & Greenleaf, Inc. High security padlock for railroad switch locking mechanism. 3,754,419, Cl. 70-52.000.
Taylor, John E. M. Longitudinal multi-elastomer resilient bushing. 3,754,317, Cl. 29-451.000.
Taylor, Lawrence A. Stool specimen collector. 3,754,287, Cl. 4-1.000.
Taylor, Lloyd D., to Polaroid Corporation. Neutralizing layers in diffusion transfer photographic film. 3,754,910, Cl. 96-3.000.
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Ticehurst, Donald I. Piano tuning pin lock. 3,754,494, Cl. 84-203.000.
Tiedeman, George T., to Weyerhaeuser Company. Rapid curing resin compositions comprising a phenol-aldehyde condensation polymer modified with an acyl hydrazine. 3,755,258, Cl. 260-59.000.
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Timmons, Richard V.; and Wittenbrook, Lawrence S., to Scott, O. M., & Sons Company, The. Cyclic cyanodithiomidocarbonate and its preparation. 3,755,363, Cl. 260-327.00m.
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Walford, Gordon L.; Sheen, Tsung-Ying; and Witzel, Bruce E., to Merck & Co., Inc. Anti-inflammatory salicylic acid derivatives. 3,755,359, Cl. 260-326.300.

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Wang, An; Yao, Ge; and Wu, Edward S., to Wang Laboratories, Inc. Positioning typewriter. 3,754,631, Cl. 197-1.00r.

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Ward, Clyde L., Jr., to United States of America, Navy. Cooling system for multiple electrical equipments. 3,754,596, Cl. 165-107.000.

Ward, Frank L., to Clarostat Mfg. Co., Inc. Automobile light-on indicator. 3,755,775, Cl. 340-52.00d.

Ward, James S. Earth drilling apparatus with cable operated drive. 3,754,606, Cl. 173-145.000.

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Weedon, Gene C.; and Crescentini, Lamberto, to Allied Chemical Corporation. Antistatic polyester fiber containing polyether. 3,755,497, Cl. 260-860.000.

Wegner, Eugene H., to Phillips Petroleum Company. Microbial conversion of naphthalene base hydrocarbons. 3,755,080, Cl. 195-28.00r.

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Weisbach, Jerry A., to Smith Kline and French Laboratories. 6-heterocyclic substituted penicillins. 3,755,299, Cl. 260-239.100.

Weise, Eberhard; Schulze, Manfred; and Rothert, Manfred, to Bayer Aktiengesellschaft. Production of aluminum fluoride. 3,755,548, Cl. 423-489.000.

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Weisglass, Louis L.; Flieder, Robert A.; and Rubin, Lewis, to Berkley Photo, Inc. Light color control apparatus. 3,754,824, Cl. 355-35.000.

Weiss, Ernest. Waste disposal system. 3,754,288, Cl. 4-131.000.

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Whipple, William, Jr. Process and apparatus for the purification of a natural body of water. 3,755,142, Cl. 210-63.000.

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Whited, Charles A., to Xerox Corporation. Automatic development control. 3,754,821, Cl. 355-4.000.

Whitehead, Clyde F. Fishing line lure retriever. 3,754,345, Cl. 43-17.200.

Whitehurst, Chester M.; and Parker, Frank D., Jr., to Parker Engineered Chemicals, Inc. Water treatment system. 3,754,741, Cl. 261-151.000.

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Wilhelm, Frederick C., to Universal Oil Products Company. Dehydrogenation with a platinum-lead catalytic composite. 3,755,480, Cl. 260-668.00d.

Wilhelmi, Heiner, to Jurid Werke GmbH. Axle identifying brake warning system. 3,755,774, Cl. 340-52.00a.

Wilke, Gunther; and Bonnemann, Helmut, to Studiengesellschaft Kohle mbH. Process for the catalytic mixed oligomerization of 1,3-diolefins with alpha-unsaturated organic compounds. 3,755,386, Cl. 260-410.90r.

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Winslow, John M.; and Sagawa, Burt K., to Minnesota Mining and Manufacturing Company. Heat developable diazo type sheets. 3,754,916, Cl. 96-75.000.

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Wisfeld, Werner; Wirth, Hans; and Lotz, Walter, to Laboratorium fur Adsorptionstichnik GmbH. Method of producing drinking water from contaminated ground and surface water. 3,755,157, Cl. 210-17.000.

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Wood, Dennis E., to Curlator Corporation. Method for manufacturing non-woven textile articles. 3,755,028, Cl. 156-62.200.

Wood, Prentice J., to Mead Corporation, The. Article carrier. 3,754,680, Cl. 220-113.000.

Woodbridge, Richard G., III. Manufacture of edible protein from marine animals by the use of ammonia. 3,754,927, Cl. 99-18.000.

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Wreen, George T., Jr.; Mann, Hugh W.; and Zeek, Elwood R., to Virginia Chemicals, Inc. Liquid trapping suction accumulator. 3,754,409, Cl. 62-503.000.

Wright, Edward S.; Angstadt, John W.; and Garrow, Gerald L., to Blaw-Knox Company. Apparatus for deep-fat cooking. 3,754,468, Cl. 99-403.000.

Wright, Harold Austin, to Sinclair-Koppers Company. Suspension polymerization of vinyl aromatic monomers in the presence of unsaturated carboxylic acid. 3,755,282, Cl. 260-93.50w.

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Yamade, Hideaki, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing L-serine. 3,755,081, Cl. 195-29.000.

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Yerkovich, Simon, to Litton Systems, Inc. Structural supports providing shielding against interference. 3,755,612, Cl. 174-35.0ms.

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Young, Frank, to United States of America, Navy. System for detecting dropout and noise characteristics of magnetic tape with switch means to select which characteristic to be selected. 3,755,731, Cl. 328-34.0ta.

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Zellerhoff, Knut; Schutz, Siegismund; and Stendel, Wilhelm, to Farbenfabriken Bayer Aktiengesellschaft. Carbamates of 2-phenylhydrazino-2-imidazolines. 3,755,351, Cl. 260-309.600.

Zellner, Carl N., to Celanese Corporation. Process for the preparation of polyamidoximes and poly(bisbenzimidazobenzophenanthroline) (BBB) type polymers derived therefrom. 3,755,254, Cl. 260-47.0cp.

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Zeutschel, Milton F., to Automation Industries, Inc. Material tester. 3,754,435, Cl. 73-17.50u.

Zimmer-Galler, Roswitha, to United States of America, Navy. Ferrocene derivatives. 3,755,311, Cl. 260-240.00r.

Zincone, Robert, to United Aircraft Corporation. Composite helicopter rotor and blade. 3,754,840, Cl. 416-226.000.

Zoecon Corporation: *See—*
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Zwanenburg, Gooitzen, to U.S. Philips Corporation. Cathode having a cavity in the emissive element. 3,755,705, Cl. 313-341.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF AUGUST, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Welmer, Edgar Arthur, Jr. Re. 27,743.

Baker, Charles O. : *See*—
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Billett Ronald J., Terence H. West, to FMC Corp. Strapping machine. Re. 27,744, 8–28–73, Cl. 100—8.

Brooks, Warren B., C. O. Baker, and E. L. Jones, to Mobil Oil Corp. Subsea production system. Re. 27,745, 8–28–73, Cl. 166—500.

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Lapple, Charles E. Re. 27,742.

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Iida, Yuzo, to Nippon Koyaku, K. K. Manual diaphragm setting device for a camera having automatic exposure device. Re. 27,741, 8–28–73, Cl. 95—10.

Lapple, Charles E., to Donaldson Co. Centrifugal classifier. Re. 27,742, 8–28–73, Cl. 209—144.

Mobil Oil Corp. : *See*—
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Achenbach, Walter B., to Owens-Illinois, Inc. Beverage glass or similar article. 228,220, 8–28–73, Cl. D7—15.

Achenbach, Walter B., to Owen-Illinois, Inc. Beverage glass or similar article. 228,245, 8–28–73. Cl. D36—8.

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Auclair, Roland. Menorah tree. 228,241, 8–28–73, Cl. D29—1.

Babcock, Richard D., M. A. Gervis, E. T. Wozny, and N. Giardina. Double bar lock. 228,226, 8–28–73, Cl. D8—117.

Bako, Lazlo, to Kidde, Walter, & Co., Inc. Catch for luggage or the like. 228,227, 8–28–73, Cl. D8—129.

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Bryce, George. Writing implement holder for a telephone. 228,239, 8–28–73, Cl. D26—14.

Bull, Donald M., to D. A. C. Investment Corp. Combination deep fat fryer range, refrigerator and food storage unit. 228,261, 8–28–73, Cl. D81—10.

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Nakanishi, Takehiko, to Kabushiki Kaisha Ricoh. Electronic calculator. 228,236, 8–28–73, Cl. D26—5.

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250.3	3,754,298
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CLASS 18	
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253R	3,754,866
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	3,754,868
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277C	3,754,869
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292	3,754,872
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90W	3,754,304
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255TV	3,754,307
256	3,754,305
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	3,754,311
91.1	3,754,308
96R	3,754,309
183.5	3,754,873
191	3,754,875
196.1	3,754,874
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203P	3,754,313
225	3,754,314
400	3,754,315
	3,754,316
451	3,754,317
460	3,754,318
509	3,754,319
576	3,754,320
578	3,754,321
625	3,754,322
628	3,754,323
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40	3,754,326
316	3,754,327
346.53	3,754,329
382	3,754,328
392	3,754,330
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62	3,754,331
64	3,754,332
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174T	3,754,334
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230	3,754,336
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10.4	3,755,607
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3B	3,754,339
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37	3,754,342
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19	3,754,346
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103	3,754,348
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227	3,754,353
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61	3,754,354
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324	3,754,358
356	3,754,359
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187	3,754,364
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471	3,754,365
535	3,754,366
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73	3,754,377
91	3,754,378
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164	3,754,380
269	3,754,381
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	3,754,384
17.2	3,754,385
17.4	3,754,386
27.5	3,754,382
	3,754,387
346	3,754,388
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7	3,754,390
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50R	3,754,392
CLASS 60	
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309	3,754,399
445	3,754,400
484	3,754,394
563	3,754,396
575	3,754,395
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45D	3,754,402
46.5	3,754,403
72.3	3,754,404
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41	3,754,406
55	3,754,407
302	3,754,408
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29	3,754,412
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33	3,754,881
42	3,754,882
88	3,754,883
119	3,754,885
134	3,754,886
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106	3,754,416
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15	3,754,417
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364R	3,754,422
455	3,754,423
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90	3,754,888
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234	3,754,425
238	3,754,426
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331	3,754,428
370	3,754,430
416	3,754,431
447	3,754,432
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61.1R	3,754,434
67.9	3,754,472
71.5U	3,754,435
81	3,754,436
99	3,754,437
141A	3,754,438
170A	3,754,439
178H	3,754,440
187	3,754,441
362AR	3,754,442
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457	3,754,447
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128	3,754,476
162	3,754,474
250R	3,754,477
432	3,754,478
499	3,754,479
512	3,754,480
527	3,754,481
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753	3,754,483
801	3,754,484
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	3,754,890
23	3,754,891
46	3,754,892
58	3,754,893
60	3,754,894
	3,754,895
82	3,754,896
96	3,754,897
122	3,754,898
129	3,754,899
130.5	3,754,900
141	3,754,901
171	3,754,902
	3,754,903
178A	3,754,904
227	3,754,905
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CLASS 81	
63	3,754,486
CLASS 82	
1C	3,754,487
4C	3,754,488
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168	3,754,490
277	3,754,491
380	3,754,492
478	3,754,493
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1.01	3,755,608
1.23	3,755,609
203	3,754,494
471	3,754,495
CLASS 85	
97	3,754,884
CLASS 89	
1B	3,754,496
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38R	3,754,448
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376	3,754,450
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1R	3,754,451
41	3,754,456
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4.5	3,754,459
10C	Re.27,741
11R	3,754,453
19	3,754,457
31EL	3,754,455
31R	3,754,454
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42	3,754,458
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3	3,754,910
35.1	3,754,911
36	3,754,912
38.3	3,754,913
48R	3,754,914
53	3,754,915
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75	3,754,916
76C	3,754,917
84R	3,754,919
87R	3,754,920
90R	3,754,921
91R	3,754,922
99	3,754,923
114.2	3,754,924
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1	3,754,925
17	3,754,926
18	3,754,927
26	3,754,928
50	3,754,929
82	3,754,930
100P	3,754,931
106	3,754,932
108	3,754,933
139	3,754,935
140R	3,754,934
	3,754,936
154	3,754,938
163	3,754,937
233.7	3,754,461
287	3,754,462
295	3,754,463
334	3,754,464
342	3,754,465
348	3,754,466
361	3,754,467
403	3,754,468
532	3,754,469
538	3,754,470
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8	Re.27,744
53	3,754,498
93P	3,754,499
97	3,754,500
99	3,754,501
133	3,754,502
229A	3,754,503
CLASS 101	
336	3,754,504
CLASS 102	
28R	3,754,506
52	3,754,507
70.2R	3,754,508
92	3,754,509
101	3,754,510
102	3,754,511
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5	3,754,505
249	3,754,512
256	3,754,513
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8	3,754,515
171	3,754,514
369B	3,754,516
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1	3,754,939
	3,754,940
3	3,754,941
14	3,754,942
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	3,754,946
38.8	3,754,943
39R	3,754,947
55	3,754,948
56	3,754,949
57	3,754,950
58	3,754,951
84	3,754,952
90	3,754,953
97	3,754,954
288Q	3,754,955
300	3,754,956
307	3,754,957
308N	3,754,958
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121.12	3,754,520
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235	3,754,519
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40	3,754,523
133R	3,754,583
206R	3,754,524
	3,754,525
CLASS 117	
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9	3,754,960
16	3,754,961
17.5	3,754,962
	3,754,963
33.5T	3,754,964
34	3,754,965
36.1	3,754,966
46CA	3,754,968
49	3,754,967
	3,754,969
50	3,754,970
51.14	3,754,527
72	3,754,971
	3,754,972
	3,754,973
75	3,754,974
93.4R	3,754,975
105	3,754,976
105.5	3,754,977
121	3,754,979
124A	3,754,978
	3,754,980
126GB	3,755,009
136	3,754,981
137	3,754,982
148	3,754,983
152	3,754,984
201	3,754,985
	3,754,986
212	3,754,987
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219	3,754,989
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420	3,754,530
637	3,754,526
	3,754,531
CLASS 119	
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52AF	3,754,528
CLASS 122	
510	3,754,533
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8.45	3,754,536
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41.86	3,754,538
90.41	3,754,539
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100	3,754,549
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232	3,754,553
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3R	3,754,558
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86D	3,755,000

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202 3,754,999

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384.4 3,754,565
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614.19 3,754,571
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103 3,755,021

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CLASS 181

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71.5 3,754,624
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61.05 3,755,636
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54R 3,755,096
55R 3,755,098
55Y 3,755,097
64R 3,755,099
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3,755,160
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103 3,754,649
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152 3,754,650
167 3,754,652
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90 3,755,523
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322 3,755,528

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CLASS 269

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322 3,754,781
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CLASS 293

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18 3,755,686
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311 3,754,816

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CLASS 353

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320 3,755,539
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364 3,755,542
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470 3,755,545
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279 3,755,591
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283 3,755,593
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288 3,755,595
300 3,755,596
304 3,755,597
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3,755,600
305 3,755,599
313 3,755,601
317 3,755,602
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3,755,604
321 3,755,605

CLASS 425						CLASS 426		CLASS 431		CLASS 432	
111	3,754,845	131	3,754,847	387	3,754,851	570	3,755,551	285	3,754,853	14	3,754,855
125	3,754,846	363	3,754,849	429	3,754,852			343	3,754,854	95	3,754,742
		385	3,754,850								

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	81	228,212		15	228,220	D14—	3	228,232	D29—	1	228,241	D49—	29	228,250	D71—	1	228,258
	157	228,214	D08—	18	228,224	D20—	99	228,223	D34—	5	228,242	D52—	2	228,252	D72—		228,259
	168	228,215		97	228,225	D23—	3	228,233		14	228,243		7	228,251	D74—	5	228,260
D07—	1	228,217		117	228,226		19	228,234		15	228,244	D55—	1	228,253	D81—	10	228,261
		228,218		129	228,227		34	228,235	D36—	8	228,245	D56—	4	228,254	D86—		228,262
		228,221		154	228,228	D26—	5	228,236	D41—	1	228,246			228,255	D87—	1	228,263
	2	228,216		236	228,231			228,237	D42—	7	228,247						

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
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36 : 228,219
228,224
228,226
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228,235
228,248
228,252
39 : 228,217
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228,245
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41 : 228,212
228,261
44 : 228,221
48 : 228,250

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Frederick B. Dent, *Secretary*